Exhibit 1

Medtronic, Inc. 29-Aug-06

Department of Health and Human Services

Public Health Service
Food and Drug Administration

Minneapolis District Office
Central Region
212 Third Avenue South
Minneapolis, MN 55401
Telephone: (612) 758-7133
FAX: (612) 334-4142

August 29, 2006

WARNING LETTER

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Refer to MIN 06- 35

Arthur D . Collins, Jr.
Chairman of the Board and Chief Executive Officer
Medtronic, Inc .
710 Medtronic Parkway
Minneapolis, MN 55432

Dear Mr. Collins:

During a May 18 - June 22, 2006, inspection of your establishment, Medtronic Neurological, located at 800 - 53rd Avenue NE, Minneapolis, MN 55421, our investigators determined that your firm manufactures implantable drug infusion and neurostimulation products to treat pain, movement disorders, and other medical conditions. These products are devices as defined by Section 201(h) of the Federal Food, Drug, and Cosmetic Act (the Act) [21 U.S.C. 321(h)] because they are intended for use in the diagnosis of disease or other conditions or in the cure, mitigation, treatment, or prevention of disease, or are intended to affect the structure or function of the body.

This inspection revealed that these devices are adulterated under Section 501(h) of the Act [21 U.S.C. 351(h)], in that the methods used in, or the facilities or controls used for, their manufacture, packing, storage, or installation are not in conformance with the Current Good Manufacturing Practice (CGMP) requirements for medical devices which are set forth in the Quality System regulation, found at Title 21, Code of Federal Regulations (CFR), Part 820. Significant deviations include, but are not limited to, the following:

1. Failure to implement procedures to ensure that a device's design input requirements are appropriate and address its intended use, including user/patient needs, as required by 21 CFR 820.30(c). Design input work for the 8731 Intrathecal Catheter has not resulted in development of a complete design specification for the Platinum/ Iridium (Pt/Ir) catheter tip bond. (For more detail on this deviation, see FDA-483 observation # 1 from the May 18 - June 22, 2006, inspection. Copy of FDA 483 attached.)

2 . Failure to conduct design validation using production units or their equivalents, as required by 21 CFR 820.30(g). Design validation testing of the Model 8731 Catheter was conducted with catheters manufactured with a Pt/Ir tip marker bonding process that was different than the process eventually used in production. (See FDA-483 observation #2.)

3. Failure to validate a process whose results cannot be fully verified by subsequent inspection and test as required by 21 CFR 820.75(a). For the 8731 Catheter, the Pt/Ir tip bonding process has not been validated. (See FDA-483 observation #3.)

4. Failure to control production processes to ensure that a device conforms to its specifications, as required by 21 CFR 820.70(a). For the 8731 Catheter, the tip bonding manufacturing procedures contained:

- an **[redacted]** of the tip, and
- instructions to **[redacted]** equipment that was no longer in service. (See FDA-483 observation #4.)

5. Failure to implement corrective and preventive action procedures addressing the investigation of the cause of nonconforrnities relating to product, processes, and the quality system as required by 21 CFR 820.100(a)(2). Examples include:

a. Corrective / Preventive Action System (C/PAS) 747 (re: 8731 tip detachments) was closed with a root cause analysis that conflicts with information received in complaints. No additional C/PAS was opened to address the complaints and failures that do not fit the root cause analysis in C/PAS 747. (See FDA-483 observation #5a.)

b. Product Comment Report (PCR) 170998 reported an 8731 catheter tip detachment and stated that " . . .post-operative the patient showed pain in the left leg, which can be related with the remaining tip ." In conflict with this reported event, a Health Hazard Analysis and "TECH NOTE" concluded that none of the tip detachments were associated with adverse clinical or neurological consequences. (See FDA-483 observation #5b.)

c. System Correction Request (SCR) 877, which addresses pump motor stalls due **[redacted]** to failures in Synchromed EL implantable infusion pumps, was closed without evidence to support conclusions that were made. (See FDA-483 observation #5c.)

6. Failure to-implement changes in methods and procedures needed to correct and prevent identified quality problems, as required by 21 CFR 820.100(a)(5). C/PAS 747 called for a redesign of the catheter tip and a new product specification defining a requirement for **[redacted]**. However, the product specification was not changed, and as a result, the revised manufacturing process was not validated, and no process monitoring was conducted. As of the inspection, **[redacted]** complaints hac been received involving tip dislodgements in catheters produced after the redesign of the tip. (See FDA-483 observation #6.)

7. Failure to identify all of the actions needed to correct and prevent the recurrence of nonconforming product and other quality problems, as required by 21 CFR 820.100(a)(3). In particular:

a. C/PAS 747, which covered detachment of Pt/Ir tips in Model 8731 Catheters, did not include an action to address 8731 Catheters that were in finished goods or already distributed. (See FDA-483 observation #7a.) (NOTE: These Model 8731 Intrathecal Catheters were eventually recalled by your firm on July 21, 2006.)

b. A field corrective action was not conducted until June 6, 2006, to address recurring Catheter Access Port (CAP) detachment failures in Synchromed EL

implantable infusion pumps. (See FDA-483 observation #7b.)

8 . Failure to implement procedures to ensure that device history records for each batch, lot, or unit are maintained to demonstrate that the device is manufactured in accordance with the device master record and the Quality Systems regulation as required by 21 CFR 820.184. Specifically:

a. Traceability Cards for some Synchromed EL implantable infusion pumps did not include complete records of operations that were conducted under Manufacturing Process Variances or Product Review Requests (PRR's). (See FDA-483 observation #8a.)

b. A copy of process variance 1955, which covered **[redacted]** of Synchromed EL pumps, was not maintained in the documentation control system. (See FDA-483 observation #8b.)

This letter is not intended to be an all-inclusive list of deficiencies at your facility . It is your responsibility to ensure compliance with the Act and regulations. The specific violations noted in this letter and in the Form FDA-483 issued at the close of the inspection may be symptomatic of serious underlying problems in your firm's manufacturing and quality assurance systems. You are responsible for investigating and determining the causes of the violations identified by the FDA. You also must promptly initiate permanent corrective and preventive action to bring your products into compliance.

Federal agencies are advised of the issuance of all Warning Letters about devices so that they may take this information into account when considering the award of contracts. Additionally, no premarket approval applications for Class III devices to which the Quality System regulation deficiencies are reasonably related will be approved until the violations have been corrected. Also, no requests for Certificates to Foreign Governments will be granted until the violations related to the subject devices have been corrected.

You should take prompt action to correct the deviations described in this letter. Failure to promptly correct these deviations may result in regulatory action being initiated by the Food and Drug Administration without further notice. These actions include, but are not limited to, seizure, injunction, and/or civil money penalties.

On July 24, 2006, we received an undated letter from George Aram, Vice President of Quality, Neurological Sector, which describes corrective actions taken and planned by your firm to address the FDA-483 Inspectional Observations. Only two of the corrective actions (for FDA-483 observations # 8 and 9) have been completed. Mr. Aram provided target completion dates for corrective actions to address the remaining FDA-483 Inspectional Observations, and he stated that monthly progress reports would be provided to our office beginning on August 28, 2006 . At this time, based on the limited information that has been provided, we are unable to determine whether your corrective actions are appropriate. In order to fully assess the implementation and effectiveness of the corrections, we will need to conduct a follow-up inspection.

[Redacted]

Please notify this office in writing within 15 working days to acknowledge receipt of this letter and to provide an update on the status of your corrective actions. Your response should be sent to Timothy G. Philips, Compliance Officer, at the address on this letterhead.

Sincerely,

/S/

W. Charles Becoat
Director
Minneapolis District

Page Last Updated: 07/08/2009
Note: If you need help accessing information in different file formats, see Instructions for Downloading

Links on this page:

Exhibit 2

Medtronic, Inc. 03-Jul-07

Department of Health and Human Services

Public Health Service
Food and Drug Administration

Minneapolis District Office
Central Region
212 Third Avenue South
Minneapolis, MN 55401
Telephone: (612) 758-7133
FAX: (612) 334-4142

July 3, 2007

WARNING LETTER

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Refer to MIN 07 - 18

Arthur D. Collins, Jr.
Chairman of the Board and Chief Executive Officer
Medtronic, Inc.
710 Medtronic Parkway
Minneapolis, Minnesota 55432

Dear Mr. Collins:

During a limited inspection of your establishment, Medtronic Neuromodulation1, located at 800 53rd Avenue Northeast, Minneapolis, Minnesota, 55421, on November 21, 2006, through January 24, 2007, investigators from the Food and Drug Administration (FDA) determined that your establishment manufactures implantable drug infusion and neurostimulation products. Under section 201(h) of the Federal Food, Drug, and Cosmetic Act (the Act), 21 U.S.C. § 321(h), these products are devices because they are intended for use in the diagnosis of disease or other conditions, or in the cure, mitigation, treatment, or prevention of disease, or are intended to affect the structure o any function of the body.

Our inspection revealed that your devices are adulterated within the meaning of section 501(h) of the Act [21 U.S.C. § 351(h)], in that the methods used in, or the facilities or controls used for, their manufacture, packing, storage, or installation are not in conformity with the Current Good Manufacturing Practice (CGMP) requirements of the Quality System (QS) regulation found at Title 21, **Code of Federal Regulations**, (21 CFR) Part 820. We received responses from Mr. George Aram, Vice President of Quality and Compliance, dated February 23, 2007, March 30, 2007, April 30, 2007, and June 4, 2007, concerning our investigators' observations noted on the Form FDA 483, List of Inspectional Observations, that was issued to officials at your establishment. We address these responses below, in relation to each of the noted violations. These violations include, but are not limited to:

Failure to implement complaint handling procedures to ensure that all complaints are evaluated to determine whether the complaint represents an

event that must be filed as a Medical Device Report under 21 CFR Part 803, as required by 21 CFR 820.198(a)(3).

It is our understanding that your establishment documents product complaints in your Product Comment Reporting (PCR) system. During the inspection, our investigators found on site several medical and/or scientific literature articles concerning adverse events relating to your devices that had not been entered into your PCR system and evaluated for reportability under 21 CFR Part 803 (Medical Device Reporting). See Observation #4 in the Form FDA 483 issued on January 24, 2007. A manufacturer has an obligation to submit an MDR report under Part 803 once it becomes aware of information, from any source, that reasonably suggests that a device it markets may have caused or contributed to an MDR reportable event (21 CFR 803.50). Therefore, your firm should have considered whether the events described in these medical and/or scientific articles would represent reportable events under 21 CFR Part 803.

In response to this observation, your firm drafted a new literature review SOP that includes proactive search methods for selecting relevant articles and reviewing them to determine their reportability. As part of your response, you also provided a new work instruction entitled "Medical Device Reporting" to facilitate the implementation of the new literature review SOP. This portion of your response appears to be adequate and wil be further evaluated at a future inspection of your facility.

Your responses also state that Medtronic Neurological met with CDRH, Office of Surveillance and Biometrics (OSB), on February 2, 2007, to discuss retrospective reporting of MDR reports based on scientific literature. Your firm states that you **[redacted]**

Our inspection revealed that your devices are misbranded under section 502(t)(2) of the Act [21 U.S.C. § 352(t)(2)], in that your firm failed or refused to furnish material or information respecting the device that is required by or under section 519 of the Act (21 U.S.C. § 360i), and 21 CFR Part 803--Medical Device Reporting (MDR) regulation. Significant deviations include, but are not limited to:

Failure to submit MDR reports within 30 days of receiving or otherwise becoming aware of information that reasonably suggests that a marketed device may have caused or contributed to a death or serious injury, as required by 21 CFR 803.50(a)(1).

Medtronic failed to submit MDR reports for serious injury adverse events that were reported by or confirmed by a health care professional, or that were reported by a patient or a patient's family member. Examples of this violation include, but are not limited to, the following PCRs:

58709, 235359, 258561, 234149, 183288, 202853, 267989, 55251, 94553, 119033, 180984, 246172, 255091, 277026, 191620, 95901, 171432, 196649, 248557, 189519, 167978, 61760, 95681, 170773, 186498, 187587, 190010, 196714, 202096, 206578, 222730, 250677, 267713, 248978, 221032, 250099, and 269319.

Many of these PCRs involve a granuloma or inflammatory mass at or near the distal tip of the intrathecal catheter used with the SynchroMed pump, which are reportable as serious injuries. Some of these were surgically removed and some of the patients reported increased pain, tingling sensation in the legs, partial paralysis, total lower limb paralysis and other gait problems resulting from the granuloma or inflammatory mass. Some of the PCRs included a fracture of the intrathecal catheter. It is important to note that the MDR regulation also provides for the submission of a malfunction MDR for events in which the information reasonably suggests that a device you market has malfunctioned and would be likely to cause or contribute to a reportable death or serious injury if the malfunction were to recur. Your firm should have considered whether the failures reported in the PCRs referenced above would have constituted reportable events under 21 CFR Part 803.

Your firm also failed to submit MDR reports within 30 days of becoming aware of literature articles that referenced problems to which your devices may have caused or contributed. These include, but are not limited to, articles by Deer, McMillan et al., Hu et al., Kofler et al., and Loughrey et al. These articles included, among other things, information on pump malfunctions, catheter separation or fracture, and inflammatory masses and granulomas.

In addition, during the inspection of your facility, our investigators collected abstracts of several literature articles. The articles associated with these abstracts must be reported as MDRs if they discuss deaths, serious injuries, or malfunctions of your devices that

would be likely to cause or contribute to a death or serious injury, if the malfunction were to recur.

Your firm's responses indicate that you interpreted the MDR regulation to mean that any consumer self-reported events were not MDR reportable unless separately confirmed by a Health Care Professional (HCP). This interpretation of the MDR regulation is incorrect. Consumer self-reported events do not have to be confirmed by a HCP in order to determine reportability. Under 21 CFR 803.50, a firm has 30 calendar days after the day it receives or otherwise becomes aware of information, from any source, that reasonably suggests that a device it markets may have caused or contributed to an MDR reportable event. If, in the process of conducting an investigation, your firm contacts an HCP for additional information, then the additional information can be used by the firm to help make a determination about the MDR reportability of the consumer complaint.

Your responses also state that the MDR Work Instruction was revised to include a requirement to assess consumer self-reported events (whether or not confirmed by a HCP) and catheter events for MDR reportability. A copy of this revised procedure was provided as part of your responses. Your revised work instruction appears to adequately address our concern regarding the reporting of consumer self-reported events. However, this corrective action will be further assessed at a future inspection of your facility.

Our inspection further revealed that your devices are misbranded under section 502(t)(2) of the Act [21 U.S.C. § 352(t)(2)], in that your firm failed or refused to furnish material or information respecting the device that is required by or under section 519 of the Act, 21 U.S.C. § 360i, and 21 CFR Part 806 - Reports of Corrections and Removals regulation. Significant deviations include, but are not limited to:

A correction or removal conducted to reduce a risk to health posed by a device was not reported in writing to FDA, as required by 21 CFR 806.10(a)(1).

In July 2003 your establishment sent a letter with an enclosed "EDUCATIONAL BRIEF," entitled "Information about Inflammatory Mass," to SynchroMed customers (physicians) Also enclosed were reprints of two articles published in the December 2002 issue of Pain Medicine and revised labeling for the SynchroMed Technical Manual. FDA defines a "correction" in 21 CFR 806.2(d) as " . . .the repair, modification, adjustment, relabeling, destruction, or inspection (including patient monitoring) of a device without its physical removal from its point of use to some other location." FDA believes that the July 2003 Educational Brief, which was sent to all customers using SynchroMed pumps, meets the definition of "correction" in that the letter provided updated labeling to customers for devices that were already in distribution.

The FDA also believes that the July 2003 Educational Brief is a reportable correction under 21 CFR 806.10(a) (1) in that the letter contained specific information intended to reduce the risk to health posed by the device. For example, the July 2003 Educational Brief specifically states that "[i]f an inflammatory mass is detected in its clinical course, prompt discontinuation of opioid delivery into the mass may cause it to shrink or disappear without the need for surgical removal." The letter also specifically recommends catheter replacement, repositioning, and other interventional procedures, depending on the patient's clinical condition. These recommendations were neither included in the pump's original labeling, nor conveyed to customers in a January 2001 communication regarding inflammatory masses.

Additionally, the July 2003 Educational Brief contained new "Post implant" warnings that suggest that clinicians should routinely monitor patients for prodromal clinical signs or symptoms of inflammatory mass such as change in character, quality or intensity of pain; reports of new radicular pain, especially at or near the dermatomal level of the catheter tip; frequent or large escalations of daily drug dose to maintain the analgesic effect; and dose escalations that may only temporarily alleviate the patient's increasing pain. These new warnings were not included in the January 2001 letter or the pump's original technical manual.

Furthermore, the journal articles included with the July 2003 Educational Brief stated with regard to adverse event reporting that 41 adverse events regarding inflammatory mass were identified as of November 2000 (conveyed to customers in the January 2001 letter). The articles also state that an additional 51 events were identified after the 2001 letter had been distributed to customers. The articles suggest that the number of new adverse events has more than doubled in one year of reporting. It is noteworthy that during the most recent inspection of your facility, your firm calculated the current rate of inflammatory masses to be approximately **[redacted]** events per **[redacted]** implants.

This figure, which has not yet been communicated to your customers, suggests that the risk of inflammatory masses occurring at or near the tip of intrathecal catheters used with SynchroMed pumps is **[redacted]** greater than the **[redacted]** rate indicated in the January 2001 letter.

Your firm's responses to this observation stated that the July 2003 Inflammatory Mass "Educational Brief" was based upon your judgment that the information presented in the Brief was an update to a January 19, 2001, "Dear Colleague" letter that had been reviewed by FDA prior to its issuance. You further stated that the Agency did not consider the 2001 "Dear Colleague" letter to be a correction or removal at that time. In addition, you stated that the revised labeling contained in the July 2003 Educational Brief had been previously reviewed by FDA as part of PMA Supplement P860004/S053, which was approved by FDA on October 9, 2002. Your firm indicated that the July 2003 Educational Brief did not constitute additional information beyond the approved labeling in the PMA Supplement.

FDA disagrees with your conclusion that the July 2003 Educational Brief was not a correction or removal. Although the Educational Brief contained language consistent with the approved labeling in PMA Supplement P860004/S053, this new labeling had not been previously communicated to physicians whose patients already had a SynchroMed pump implanted within them. Note that the 21 CFR Part 806 definitions and requirements do not depend upon whether the revised labeling in the July 2003 Education Brief had gone through the PMA supplement process or that FDA had prior knowledge of the information through a PMA supplement. Your firm is required to review each corrective action and/or removal and determine whether the requirements of the regulation have been met and thus require a report. Providing the information to FDA via another requirement does not abrogate your responsibility to comply with the requirements of 21 CFR Part 806. If your firm determines that the event in question is not reportable, you must provide an explanation of your decision not to submit a Corrections and Removals report and keep a record of this justification, as required by 21 CFR 806.20.

Our inspection also revealed that your firm has several procedures for Medical Device Reporting and Adverse Drug Experience Reporting. These procedures, in turn, reference several other procedures. Your firm's current problems regarding MDR reporting, as discussed above in this Warning Letter, may be exacerbated by the complexity of your procedures and might have contributed to your firm's deviations from the regulations regarding MDR reporting.

In addition, the inspection revealed several ongoing violations in your quality system that were also noted in the 483. In particular, you have failed to achieve consistent compliance in areas such as design controls (21 CFR 820.30) and corrective and preventive action (21 CFR 820.100). These areas had previously been found not to be in compliance during the inspection performed from May 18 through June 22, 2006. These quality system violations were also cited in an August 29, 2006, Warning Letter that was sent to you. By letter dated June 4, 2007, George Aram, Vice President of Quality, Neurological Sector, provided an update on the status of the corrective actions taken and planned by your firm to address these violations. In that letter, Mr. Aram stated that the longest remediation activities extend into November 2007. We encourage you to expedite your efforts to achieve full compliance and to keep us informed of your progress.

In your firm's June 4, 2007 response, you also indicated that your Risk Evaluation Board (REB) met on May 10, 2007, to **[redacted]**

This letter is not intended to be an all-inclusive list of deficiencies at your facility. It is your responsibility to ensure compliance with the Act and regulations. The specific violations noted in this letter and in the Form FDA 483 issued at the close of the inspection may be symptomatic of serious underlying problems in your firm's manufacturing and quality assurance systems. You are responsible for investigating and determining the causes of the violations identified by he FDA. You also must promptly initiate permanent corrective and preventive action to bring your products into compliance.

Federal agencies are advised of the issuance of all Warning Letters about devices so that they may take this information into account when considering the award of contracts. Additionally, no premarket approval applications for Class III devices to which the Quality System regulation deficiencies are reasonably related will be approved until the violations have been corrected. Also, no requests for Certificates to Foreign

Governments will be granted until the violations related to the subject devices have been corrected.

You should take prompt action to correct the deviations described in this letter. Failure to promptly correct these deviations may result in regulatory action being initiated by the Food and Drug Administration without further notice. These actions include, but are not limited to, seizure, injunction, and/or civil money penalties.

Please notify this office in writing within 15 working days to acknowledge receipt of this letter and to provide an update on the status of your corrective actions. Your response should be sent to Timothy G. Philips, Compliance Officer, at the address on this letterhead.

Sincerely,

/S/

W. Charles Becoat
Director
Minneapolis District

TGP/ccl

1At the time of the FDA's inspection, the establishment was known as Medtronic Neurological.

Exhibit 3

DEPARTMENT OF HEALTH AND HUMAN SERVICES
FOOD AND DRUG ADMINISTRATION

DISTRICT OFFICE ADDRESS AND PHONE NUMBER	DATE(S) OF INSPECTION
212 3rd Avenue South Minneapolis, MN 55401 612/334-4100 Fax: 612/334-4134	11/21/2006 - 1/24/2007*
	FEI NUMBER 2182207

NAME AND TITLE OF INDIVIDUAL TO WHOM REPORT IS ISSUED

TO: Dr. Susan Alpert, Ph.D., M.D., Senior Vice President, Chief Quality and Regulatory Officer

FIRM NAME	STREET ADDRESS
Medtronic Neurological	800 53rd Avenue NE
CITY, STATE AND ZIP CODE	TYPE OF ESTABLISHMENT INSPECTED
Minneapolis, MN 55421	Manufacturer

THIS DOCUMENT LISTS OBSERVATIONS MADE BY THE FDA REPRESENTATIVE(S) DURING THE INSPECTION OF YOUR FACILITY. THEY ARE INSPECTIONAL OBSERVATIONS; AND DO NOT REPRESENT A FINAL AGENCY DETERMINATION REGARDING YOUR COMPLIANCE. IF YOU HAVE AN OBJECTION REGARDING AN OBSERVATION, OR HAVE IMPLEMENTED, OR PLAN TO IMPLEMENT CORRECTIVE ACTION IN RESPONSE TO AN OBSERVATION, YOU MAY DISCUSS THE OBJECTION OR ACTION WITH THE FDA REPRESENTATIVE(S) DURING THE INSPECTION OR SUBMIT THIS INFORMATION TO FDA AT THE ADDRESS ABOVE. IF YOU HAVE ANY QUESTIONS, PLEASE CONTACT FDA AT THE PHONE NUMBER AND ADDRESS ABOVE.

THE OBSERVATIONS NOTED IN THIS FORM FDA 483 ARE NOT AN EXHAUSTIVE LISTING OF OBJECTIONABLE CONDITIONS. UNDER THE LAW, YOUR FIRM IS RESPONSIBLE FOR CONDUCTING INTERNAL SELF AUDITS TO IDENTIFY AND CORRECT ANY AND ALL VIOLATIONS OF THE QUALITY SYSTEM REQUIREMENTS.

DURING AN INSPECTION OF YOUR FIRM I OBSERVED:

1. Risk analysis is incomplete. Specifically, Risk Analysis Reports for SynchroMed pumps and intrathecal catheters have not identified inflammatory mass / granuloma / fibrosis as an actual or potential hazard. This is contrary to the requirements of Risk Management Procedure, ENGD1120.

Promised to correct. TJP

2. The corrective and preventive action procedures addressing the investigation of the cause of nonconformities relating to product, processes, and the quality system were not implemented. Specifically, Product Comment Reports (PCR's) are not being evaluated as required by procedure RPM1234, "PCR Capa Evaluation Decision Point". PCR's are not being ranked by Frequency of Occurrence, Severity and Detectability (OSD). Examples include:

PCR Reported Event
60377 Discovered granuloma via MRI. Patient experienced subarachnoid hemorrhage and paralysis.
183288 Patient reports granuloma diagnosed...following paralysis of left leg. Surgery to remove distal end of catheter with granuloma. Post op: Patient reports still paralyzed.
191620 Patient reported "fell over backwards", burning/numbing pain in abdominal, back, legs, and feet. MRI found granuloma
278679 Rep reports: Granuloma at catheter tip. Doctor states that this is the largest or 2nd largest he has ever seen.
257349 MD reported patient has a large granuloma

DATES OF INSPECTION: 11/21/2006, 12/4-6/2006, 12/11-14/2006, 12/19-20/2006, 1/3-4/2007, 1/8/2007, 1/10/2007, 1/23-24/2007

SEE REVERSE OF THIS PAGE	EMPLOYEE(S) SIGNATURE	EMPLOYEE(S) NAME AND TITLE (Print or Type)	DATE ISSUED
	Timothy G. Philips Jocelyn M. Muggli	Timothy G. Philips, Compliance Officer Jocelyn M. Muggli, Consumer Safety Officer	01/24/07

DEPARTMENT OF HEALTH AND HUMAN SERVICES
FOOD AND DRUG ADMINISTRATION

DISTRICT OFFICE ADDRESS AND PHONE NUMBER	DATE(S) OF INSPECTION
212 3rd Avenue South Minneapolis, MN 55401 612/334-4100 Fax: 612/334-4134	11/21/2006 - 1/24/2007* FEI NUMBER 2182207

NAME AND TITLE OF INDIVIDUAL TO WHOM REPORT IS ISSUED

TO: Dr. Susan Alpert, Ph.D., M.D., Senior Vice President, Chief Quality and Regulatory Officer

FIRM NAME	STREET ADDRESS
Medtronic Neurological	800 53rd Avenue NE
CITY, STATE AND ZIP CODE	TYPE OF ESTABLISHMENT INSPECTED
Minneapolis, MN 55421	Manufacturer

THIS DOCUMENT LISTS OBSERVATIONS MADE BY THE FDA REPRESENTATIVE(S) DURING THE INSPECTION OF YOUR FACILITY. THEY ARE INSPECTIONAL OBSERVATIONS; AND DO NOT REPRESENT A FINAL AGENCY DETERMINATION REGARDING YOUR COMPLIANCE. IF YOU HAVE AN OBJECTION REGARDING AN OBSERVATION, OR HAVE IMPLEMENTED, OR PLAN TO IMPLEMENT CORRECTIVE ACTION IN RESPONSE TO AN OBSERVATION, YOU MAY DISCUSS THE OBJECTION OR ACTION WITH THE FDA REPRESENTATIVE(S) DURING THE INSPECTION OR SUBMIT THIS INFORMATION TO FDA AT THE ADDRESS ABOVE. IF YOU HAVE ANY QUESTIONS, PLEASE CONTACT FDA AT THE PHONE NUMBER AND ADDRESS ABOVE.

DURING AN INSPECTION OF YOUR FIRM (I) (WE) OBSERVED:

95901 Confirmed intraspinal mass. Patient reports "pain at catheter site for three months, numbness/tingling in hands and feet, had two MRI's showing suspected granuloma."
171432 Patient reports six months of excellent symptom relief following implant in 2000, however symptoms began to return including increased pain...Granuloma in September 2003 and surgery was performed...
196649 Patient reports granuloma formed in Oct 2001 and pump was removed
248557 Patient reports granuloma
277858 Diagnosis of the catheter tip associated granuloma with occlusion of the catheter and battery depletion

Other PCR's that lack OSD determination include, but are not limited to:

118133, 58709, 251109, 276122, 59587, 61291, 58396, 189519, 202853, 204520, 206064, 221974, 267989, 243332, 209539, 167978, 225570, 203970, 55251, 274528, 268372, 254717, 233634, 51242, 52055, 59701, 61632, 61634, 61760, 94553, 95681, 119033, 119052, 170773, 180984, 183288, 186498, 187587, 190010, 196714, 202096, 204637, 206578, 222730, 235359, 246172, 250677, 250714, 258561, 267333, 267713, 270204, 277026,187323, 116603, 234149, 201803, 248978, 221032, 235480, 246046, 250099, 255091, 269319

Promised to correct - TGP

3. The procedures addressing identification of corrective and preventive actions were not implemented. Specifically, Product Comment Reports (PCR's) are being closed with "Investigation Not Required" and no corrective action necessary with conclusions such as, "Does not appear to be a product performance issue", "Reported event currently included in product labeling", and other similar statements. (In some cases, there is no documented rationale for lack of corrective action.) These conclusions are being made without product risk assessment review, which is required by RPM1234, "PCR Capa Evaluation Decision Point". Examples include:

PCR Reported Event

SEE REVERSE OF THIS PAGE	EMPLOYEE(S) SIGNATURE	EMPLOYEE(S) NAME AND TITLE (Print or Type)	DATE ISSUED
	TGP	Timothy G. Philips, Compliance Officer Jocelyn M. Muggli, Consumer Safety Officer	01/24/07

DEPARTMENT OF HEALTH AND HUMAN SERVICES
FOOD AND DRUG ADMINISTRATION

DISTRICT OFFICE ADDRESS AND PHONE NUMBER	DATE(S) OF INSPECTION
212 3rd Avenue South Minneapolis, MN 55401 612/334-4100 Fax: 612/334-4134	11/21/2006 - 1/24/2007*
	FEI NUMBER 2182207

NAME AND TITLE OF INDIVIDUAL TO WHOM REPORT IS ISSUED

TO: Dr. Susan Alpert, Ph.D., M.D., Senior Vice President, Chief Quality and Regulatory Officer

FIRM NAME	STREET ADDRESS
Medtronic Neurological	800 53rd Avenue NE
CITY, STATE AND ZIP CODE	TYPE OF ESTABLISHMENT INSPECTED
Minneapolis, MN 55421	Manufacturer

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DURING AN INSPECTION OF YOUR FIRM (I) (WE) OBSERVED:

116603 Confirmed intraspinal mass. Decreased pain relief. Weaned from medication. Doctor believes mass will shrink.
234149 Patient reported: MRI showed a mass. Pump removed. Catheter broken and not completely removed. Nerve damage during surgery – now paralyzed in left leg.
201803 Patient has granuloma and is a paraplegic
248978 Patient reports growth/mass at catheter. Catheter moved several times and replaced. Mass removed. Numbness from legs down.
221032 Patient reports 5/16/05: I have developed a granuloma at the catheter tip
235480 Patient's sister reported: last week patient experienced respiratory arrest, was air vacked to hospital w/ an overdose. Patient had bolus due to possible granuloma.
246046 Doctor reports patient has paralysis down one leg (left). Mass at catheter tip was confirmed via MRI.
250099 Patient reports 2/27/06: granuloma is growing a long side the catheter and not the tip. (2nd opinion physicians will not see him)
255091 Patient reports having back surgery last month for a granuloma.
269319 Patient reports: Began to loose function of their legs in May of 2006.

Additional PCR's that were closed without investigation, corrective action, or product risk assessment review include, but are not limited to:

118133, 58709, 251109, 276122, 59587, 61291, 58396, 189519, 202853, 204520, 206064, 221974, 267989, 243332, 209539, 167978, 225570, 203970, 55251, 274528, 268372, 254717, 233634, 51242, 52055, 59701, 61632, 61634, 61760, 94553, 95681, 119033, 119052, 170773, 180984, 183288, 186498, 187587, 190010, 196714, 202096, 204637, 206578, 222730, 235359, 246172, 250677, 250714, 258561, 267333, 267713, 270204, 277026,187323, 60377, 183288, 191620, 278679, 257349, 95901, 171432, 196649, 248557, 277858

Promised to correct.

4. Complaint handling procedures have not been implemented to ensure that all complaints are evaluated to determine whether the complaint should be filed as a Medical Device Report.

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	TGP	Timothy G. Philips, Compliance Officer Jocelyn M. Muggli, Consumer Safety Officer	01/24/07

DEPARTMENT OF HEALTH AND HUMAN SERVICES
FOOD AND DRUG ADMINISTRATION

DISTRICT OFFICE ADDRESS AND PHONE NUMBER	DATE(S) OF INSPECTION
212 3rd Avenue South Minneapolis, MN 55401 612/334-4100 Fax: 612/334-4134	11/21/2006 - 1/24/2007*
	FEI NUMBER 2182207

NAME AND TITLE OF INDIVIDUAL TO WHOM REPORT IS ISSUED

TO: Dr. Susan Alpert, Ph.D., M.D., Senior Vice President, Chief Quality and Regulatory Officer

FIRM NAME	STREET ADDRESS
Medtronic Neurological	800 53rd Avenue NE
CITY, STATE AND ZIP CODE	TYPE OF ESTABLISHMENT INSPECTED
Minneapolis, MN 55421	Manufacturer

THIS DOCUMENT LISTS OBSERVATIONS MADE BY THE FDA REPRESENTATIVE(S) DURING THE INSPECTION OF YOUR FACILITY. THEY ARE INSPECTIONAL OBSERVATIONS; AND DO NOT REPRESENT A FINAL AGENCY DETERMINATION REGARDING YOUR COMPLIANCE. IF YOU HAVE AN OBJECTION REGARDING AN OBSERVATION, OR HAVE IMPLEMENTED, OR PLAN TO IMPLEMENT CORRECTIVE ACTION IN RESPONSE TO AN OBSERVATION, YOU MAY DISCUSS THE OBJECTION OR ACTION WITH THE FDA REPRESENTATIVE(S) DURING THE INSPECTION OR SUBMIT THIS INFORMATION TO FDA AT THE ADDRESS ABOVE. IF YOU HAVE ANY QUESTIONS, PLEASE CONTACT FDA AT THE PHONE NUMBER AND ADDRESS ABOVE.

DURING AN INSPECTION OF YOUR FIRM (I) (WE) OBSERVED:

Specifically, the following medical / scientific literature articles were not entered as PCR's and evaluated for reportability under Medical Device Reporting.

Deer - A Prospective Analysis of Intrathecal Granuloma in Chronic Pain Patients: A Review of the Literature and Report of a Surveillance Study. Pain Physician 2004;7:225-228

McMillan et al – Catheter- Associated Masses in Patients Receiving Intrathecal Analgesic Therapy. Anest Analg 2003;96:186-90

Hu et al – Withdrawal Symptoms in a Patient Receiving Intrathecal Morphine via an Infusion Pump. Journal of Clinical Anesthesia 2003; 14:595-597.

Kofler et al – The Impact of Intrathecal Baclofen on Gastrointestinal Function. Brain Injury 2002; 16:825-836.

Loughrey et al – Dissociative Mental State in a Patient with an Intrathecal Drug Administration System. Anesth Analg 2002; 95:1009-1011.

Dawes et al – Microfracture of a Baclofen Pump Catheter with Intermittent Under- and Overdose. Pediatr Neurosurg 2003; 39, 3:144-148.

Gaertner et al – Encapsulation of an Intrathecal Catheter. Pain 2003; 103,1-2:217-220.

Pasquier et al – Subdural Catheter Migration May Lead to Baclofen Pump Dysfunction. Spinal Cord 2003; 41,12:700-702.

Ubogu et al – Transverse Myelitis Associated with Acinetobacter baumanii Intrathecal Pump Catheter-related infection. Reg Anesth Pain Med 2003;28,5:470-474.

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DURING AN INSPECTION OF YOUR FIRM (I) (WE) OBSERVED:

Burchiel et al – Correlation between Withdrawal Symptoms and Medication Pump Residual Volume in Patients with Implantable SynchroMed Pumps: Comments. Neurosurgery 2004; 55,2:393-394.

Njee et al – Intrathecal Morphine Infusion for Chronic Non-malignant Pain: A Multiple Center Retrospective Survey. Neuromodulation 2004; 7,4:249-259.

Perren et al – Spinal Cord Lesion after Long-Term Intrathecal Clonidine and Bupivacaine Treatment for the Management of Intractable Pain. Pain 2004; 109:189-194.

Taha et al – Correlation between Withdrawal Symptoms and Medication Pump Residual Volume in Patients with Implantable SynchroMed Pumps. Neurosurgery 2004; 55,2:390-393.

Toombs et al – Intrathecal Catheter Tip Inflammatory Mass: A Failure of Clonidine to Protect. Anesthesiology 2005; 102, 3: 687-690.

Levin et al – Paraplegia Secondary to Progressive Necrotic Myelopathy in a Patient with an Implanted Morphine Pump. American Journal of Physical Medicine & Rehabilitation; 8:193-196.

Murphy et al – Intrathecal Catheter Granuloma Associated with Isolated Baclofen Infusion. Anesthesia and Analgesia 102:848-852.

Toombs et al – Intrathecal Catheter Tip Inflammatory Mass: A Failure of Clonidine to Protect. Anesthesiology 102:687-690.

Vender et al – Identification and Management of Intrathecal Baclofen Pump Complications: A Comparison of Pediatric and Adult Patients. Journal of Neurosurgery 104(1 Suppl):9-15.

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DURING AN INSPECTION OF YOUR FIRM (I) (WE) OBSERVED:

Wadhwa et al – Spinal Cord Compression in a Patient with a Pain Pump for Failed Back Syndrome: A Chalk-like Precipitate Mimicking a Spinal Cord Neoplasm: case report. Neurosurgery 58:E387; discussion E387. Promised to correct. TGP

5. There is no data or statistical analysis available to support a conclusion that "...inflammatory mass has been reduced...", as stated in a 10-3-06 memo from the Director of Reliability Engineering.

• As of December 15, 2006, there have been [-] cases of inflammatory mass / granuloma / fibrosis reported into the PCR system for devices implanted in the U.S. Using that data, the calculated rate of occurrence (number of reported events / number of implants to treat pain) is over four times greater than the [-]% incidence rate that was reported in a January 19, 2001, "Dear Colleague" letter titled, "Important Message Regarding the Occurrence of Inflammatory Masses at the Tip of Intraspinal Catheters".

• Data compiled and titled "Monitoring of Fibrosis in NQPPR" for third quarter FY02 through second quarter FY07 also fails to support a conclusion that inflammatory mass has been reduced.

Promised to correct. TGP

6. Not all of the actions needed to correct and prevent the recurrence of nonconforming product and other quality problems have been identified. Specifically:

a. There was no C/PAS, CAPA, or Watchlist to address ongoing product performance concerns involving inflammatory mass / granuloma / fibrosis.

b. C/PAS 1227 and C/PAS 1254 address inadequate / unclear procedures for handling adverse event information received via "self-reports" and scientific literature. Neither C/PAS addresses how to handle adverse events that were previously not processed properly in the PCR and MDR systems.

Promised to correct. TGP

7. An MDR report was not submitted within 30 days of receiving or otherwise becoming aware of information that reasonably suggests that a marketed device may have caused or contributed to a death or serious injury. Specifically, Medical Device Reports were not filed for the following:

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DURING AN INSPECTION OF YOUR FIRM (I) (WE) OBSERVED:

a. Adverse events reported by and/or confirmed by a health care professional

PCR Reported Event

204637 Patient reported being diagnosed with a catheter tip granuloma in August
235359 Patient reported 10/19/05: I have tumors on my spine, one is right above the catheter.
258561 Patient states 5/12/06: she now has developed scar tissue at catheter tip.
58709 Fractured catheter leading to revision surgery
251109 Ver Donck et al - A Prospective, Open-label Study of Long-term Intrathecal Ziconotide for Chronic Nonmalignant Back Pain: A Case Report. Neuromodulation 2006;9:68-71

b. Adverse events reported by patients or family members

PCR Reported Event

234149 Patient reported: MRI showed a mass. Pump removed. Catheter broken and not completely removed. Nerve damage during surgery – now paralyzed in left leg.
183288 Patient reports granuloma diagnosed...following paralysis of left leg. Surgery to remove distal end of catheter with granuloma. Post op: Patient reports still paralyzed.
202853 Patient reported scar tissue growth smashing catheter. Had to take out the growth. Put catheter back in spine and having problems again – weight loss, nausea, pump vibrating, legs starting to spasm.
267989 Patient stated that physician confirmed granuloma by MRI
55251 Patient reported removal of catheter due to granuloma. Lost feeling in left leg, difficulty walking, and higher sensitivity in right leg and foot
94553 Patient reports granuloma at tip of catheter. Right leg now paralyzed and patient confined to a wheelchair.
119033 Patient states MRI confirmed IM had formed near L1-L2. March 2003 mass removed. June 2003 MRI confirmed another mass.

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DURING AN INSPECTION OF YOUR FIRM (I) (WE) OBSERVED:

180984 Patient reports having granuloma...has suffered paralysis on the left side of her body
183288 Patient reports granuloma diagnosed 8/2003 following paralysis of left leg. Surgery 1/22/2004 to remove distal end of catheter with granuloma. Post op: Patient reports still paralyzed
246172 Patient reports 2/1/06: greatly increased pain at his lower left side - MRI showed a spec at the tip of catheter - might be a granuloma. (Later said doctor confirmed.)
255091 Patient reports having back surgery last month for a granuloma.
277026 Patient reported system removed due to allergic reaction to pump or medicine, crystallization and cyst formed where catheter was. Patient reports nerve damage affecting ambulation. Also, lost use of legs, fell and hit head on concrete floor, lost memory, two weeks in hospital.

Additional examples of PCR's covering adverse events reported by patients or family members that were not MDR'ed include:

189519, 248978, 191620, 167978, 61760, 95681, 95901, 119052, 170773, 171432, 186498, 187587, 190010, 196649, 196714, 202096, 206578, 221032, 222730, 248557, 250099, 250714, 267713, 269319

Promised to correct

8. A correction or removal, conducted to reduce a risk to health posed by a device, was not reported in writing to FDA. Specifically, in July 2003, a letter with an enclosed "EDUCATIONAL BRIEF" titled "Information about Inflammatory Mass" was sent to SynchroMed customers (physicians). Also enclosed were reprints of two articles published in the December 2002 issue of Pain Medicine and revised labeling for the SynchroMed Technical Manual. The revised labeling included a post-implant warning, adverse event information, and patient management recommendations concerning the recognition, treatment, and mitigation of inflammatory mass.

Reported corrected, not verified.

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	Timothy G. Philips Jocelyn M. Muggli	Timothy G. Philips, Compliance Officer Jocelyn M. Muggli, Consumer Safety Officer	01/24/07

Exhibit 4

Medtronic Puerto Rico Operations Company

Department of Health and Human Services

Public Health Service
Food and Drug Administration
San Juan District
Compliance Branch
466 Fernandez Juncos Avenue
San Juan Puerto Rico
00901-3223
Telephone: 787-474-9500
FAX: 787-729-6658

June 1, 2009

WARNING LETTER
SJN-2009-08

Certified Mail
Return Receipt Requested

Mr. William A. Hawkins
CEO and President
Medtronic Inc.
710 Medtronic Parkway
Minneapolis, MN 55432-5604

Dear Mr. Hawkins:

Food and Drug Administration

During an inspection of your firm located at Road 31 Km 24 Ceiba Norte Industrial Park Juncos, Puerto Rico, on November 12, 2008, through December 15, 2008, investigators from the United States Food and Drug Administration (FDA) determined that your firm manufactures Synchromed® II Pumps and MiniMed Paradigm® Insulin Pumps. Under section 201(h) of the Federal Food, Drug and Cosmetic Act (the Act), 21 U.S.C. § 321(h), these products are devices because they are intended for use in the diagnosis of disease or other conditions or in the cure, mitigation, treatment, or prevention of disease, or are intended to affect the structure or function of the body.

This inspection revealed that the Synchromed® II Pumps are adulterated within the meaning of section 501 (h) of the Act (21 U.S.C. §351 (h)), in that the methods used in, or the facilities or controls used for, their manufacture, packing, storage, or installation are not in conformity with the Current Good Manufacturing Practice (CGMP) requirements of the Quality System (QS) regulation found at Title 21, Code of Federal Regulations (C.F.R.), Part 820. We received written responses from Mr. Manuel Santiago, Vice President of Medtronic Puerto Rico Operations Company (MPROC), dated January 20, 2009, and March 31,2009, concerning our investigators' observations noted on the form FDA 483, List of Inspectional Observations that was issued to your firm. We address these responses below, in relation to each of the noted violations. These violations include, but are not limited to, the following:

1) Failure to establish and maintain process control procedures that describe any process controls necessary to ensure conformance to specifications, which shall include monitoring and control of process parameters and component and device characteristics during production, as required by 21 CFR 820.70(a).

For example:

a) Multiple Synchromed® II Pumps were released for distribution and implanted in patients even though they were not filled with propellant as required by your Process Operation Description (POD) **(b) (4)** Your firm's investigation, Nonconformance Report (NCR) **(b) (4)** which started in **(b) (4)** found that several implantable pumps, including serial numbers NGV300069H, NGV301133H, NGP302823H, NGV300225H, NGV401554H, NGV4022253H, NGP307091H, NGP301055H, and NGP304851H, were released to the market without being filled with propellant and this was not discovered in the propellant weight check during manufacturing. Your firm's manufacturing step requires a **(b) (4)** after the propellant is added to the pump. The 100% mass check was ineffective to identify that devices lacked the propellant. You became aware of this situation after confirming two complaints receive on **(b) (4)** (Product Comment Report (PCR) **(b) (4)** and **(b) (4)** (PCR **(b) (4)** PCR **(b) (4)** states that the product had to be explanted because of issues related to the lack of propellant. PCR **(b) (4)** created ir **(b) (4)** also documented that two pumps had to be explanted on **(b) (4)** and **(b) (4)** due to lack of propellant.

b) On June 23, 2008, at the **(b) (4)** one Synchromed® II Pump was found that did not show evidence of a perforated septum. The **(b) (4)** is performed at this station. The **(b) (4)** is performed to detect obstruction in the **(b) (4)** early in the manufacturing process. **(b) (4)**As part of your firm's assessment (Nonconformance Evaluation Request (NCER) **(b) (4)** that were at this manufacturing stage were visually inspected. This inspection revealed that **(b) (4)** of the **(b) (4)** Synchromed® II Pumps did not contain the **(b) (4)** indicating that the **(b) (4)** was not conducted on these **(b) (4)** Synchromed® II Pumps.

c) On June 25, 2008, at the **(b) (4)** one Synchromed® II Pump was found without a **(b) (4)** at the **(b) (4)** The **(b) (4)** needs to be perforated to test the **(b) (4)** The **(b) (4)** is a safety mechanism that serves to assure that the pump is never overfilled. As part of your firm's assessment (NCER **(b) (4)** ,the Synchromed® II Pumps in the firm's existing inventory at MPROC were visually inspected. **(b) (4)** were found without the **(b) (4)** However, the electronic device history record for these devices showed entries indicating that the **(b) (4)** was conducted. Your firm expanded the scope of the investigation (NCR **(b) (4)** and found **(b) (4)** additional Synchromed® II Pumps where the **(b) (4)** pressure was not conducted and **(b) (4)** devices with testing discrepancies. Your firm's investigation further determined that a total of **(b) (4)** Synchromed® II Pumps had records that indicated that the **(b) (4)** was performed, when the test was not actually conducted. Of these affected devices, **(b) (4)** pumps were distributed to customers.

We have reviewed your responses dated January 20, 2009, and March 31, 2009, and our conclusions follow:

a) Regarding the corrective actions that your firm has taken to address the Synchromed® II Pumps with the missing propellant, you initially identified this problem in May 2006. You initiated a corrective and preventive action (CAPA) investigation in January 2007, determined the root cause to be related to the **(b) (4)** failing to properly fill propellant into the Synchromed® II Pump reservoir, and failure of **(b) (4)** to verify the fill weight of devices after being processed through the filling equipment. Your firm conducted a Health Hazard Assessment in March 2008. In May 2008, your firm conducted a voluntary recall of the Synchromed® II Pumps that did not contain any propellant, and notified the FDA. Your firm's response indicates that MPROC has confirmed that the corrective actions regarding the Synchromed® II Pumps with the missing propellant were completed and effective. FDA is concerned with your failure to initiate a recall for devices affected by the propellant problem in a timely manner. Based on the chronology identified in your response, it took almost 2 years from when the missing propellant was initially identified to conduct a recall. The adequacy of your response cannot be determined at this time. FDA will assess the effectiveness of your firm's recall procedures and CAPA's during the next inspection.

b) Regarding the actions that your firm has taken to prevent recurrence of Synchromed® II Pumps from being distributed without propellant, you conducted process validation for the manufacturing process changes between April and May 2007. Subsequently, you updated your procedures and re-trained your personnel on these procedures. The adequacy of your response cannot be determined at this time. FDA will assess the effectiveness of your CAPA's during the next inspection.

c) Regarding the failure to conduct the and the **(b) (4)** and **(b) (4)** the adequacy o the response cannot be determined at this time. Based on your response, the root cause was determined to be related to **(b) (4)** manufacturing instructions for the Synchromed® II Pumps. MPROC has performed detailed Health Hazard Analyses for these two problems. Your firm has established additional checkpoints in the manufacturing process to verify the **(b) (4)** and **(b) (4)** are being completed; reviewed the manufacturing process to ensure that the steps were correct and specific; retrained employees in performing the manufacturing steps; and established additional oversight by increasing the internal process audits of the Synchromed® II Pump manufacturing operation. Your firm identified other improvement actions that will be implemented within the next year, as identified by the timetable in your responses. The adequacy of your corrective and preventive actions will be determined during the next inspection.

2) Failure to establish and maintain procedures for implementing corrective and preventive action that include identifying the action(s) needed to correct and prevent recurrence of nonconforming product and other quality problems, as required by 21 CFR 820.100(a).

For example:

On October 5, 2008, your firm performed a **(b) (4)** of data from the **(b) (4)** records (which stores the results of in-process testing) and the **(b) (4)** manufacturing records (which controls the manufacturing process for the Synchromed® II Pump). The intent of the **(b) (4)** was to provide another level of oversight to ensure that in-process tests were actually being performed on devices, as they progressed through manufacturing. This report, however, revealed that another step, **(b) (4)** for each Synchromed® II Pump, was not performed during manufacturing. **(b) (4)** are unique to each device and have values that vary from **(b) (4)** This constant is used by the device in critical internal functions such as

calculating drug reservoir levels and drug dispensing rates. Our investigators found over **(b) (4)** complaints in your firm's complaint handling system related to accuracy rates. The **(b) (4)**, report did not reference any NCR or other type of investigation into this problem.

We have reviewed your responses dated January 20, 2009, and March 31, 2009, and our conclusions follow:

Your responses state that a comprehensive review of the CAPA procedures at MPROC will be conducted by July 31, 2009. The adequacy of your response cannot be determined at this time. The adequacy of your firm's corrective actions will be determined during the next inspection.

3) Failure to establish and maintain procedures to ensure that Device History Records (DHR's) for each batch, lot, or unit are maintained to demonstrate that the device is manufactured in accordance with the Device Master Record (DMR), as required by 21 CFR 820.184.

Specifically, a review of thirteen (13) DHR's for the Synchromed® II Pumps revealed that your firm's procedure entitled **(b) (4)** (Procedure POD **(b) (4)** Revision **(b) (4)** is not always followed. For example:

a) A comparison between DHR's for the Synchromed® II Pump serial numbers NGP319205H and NGV416698H, and the respective **(b) (4)** revealed that these two devices were dispatched into the sterilizer after the **(b) (4)** Your procedures require that the devices be placed into the **(b) (4)**

b) DHR's for Synchromed® II Pump serial numbers NGV416743H, NGV404480H, NGV417063H, NGP306174H, NGV416451H, NGV416578H, NGV418943H, and NGP305847H show that the verification of the **(b) (4)** and **(b) (4)** and **(b) (4)** were recorded after the steam sterilization cycle had completed, and not prior to initiating the cycle, as required by Procedure POD **(b) (4)**

We have reviewed your responses dated January 20,2009, and March 31, 2009, and our conclusions follow:

Your responses states that the devices described above went through the complete sterilization process, and were determined to be sterile at the conclusion of the cycle. However, your firm acknowledges that the sterilization process was not performed in the order specified by your procedures. The adequacy of your response cannot be determined at this time. The adequacy of your firm's corrective and preventive actions will be determined during the next inspection.

4) Failure to review, evaluate, and investigate complaints involving the possible failure of a device, labeling, or packaging to meet any of its specifications, as required by 21 CFR 820.198(c).

For example:

(b) (4) received on **(b) (4)** and **(b) (4)** received on **(b) (4)** both describe events where patients who were implanted with the Synchromed® II Pump developed infections. A review of the DHR's for the devices identified in the PCR's Synchromed® II Pump serial numbers NGP319205H and NGV416698H, respectively) show that the devices were dispatched into the sterilizer after the **(b) (4)** had already started. The complaint records stated that an investigation had been opened to assess these complaints. However, a copy of this investigation was not included as part of the complaint record, there was no reference to a specific

investigation report number, and there was no documentation whether the investigation was successfully closed. Also, there was no record in the complaint file that Medical Device Reports were filed by your firm with FDA for this complaint.

Your responses dated January 20, 2009 and March 31, 2009, did not address this charge because it was not included in the FDA 483 issued to you on December 15, 2008. The adequacy of your corrective and preventive actions will be determined during the next inspection.

Our inspection also revealed that your MiniMed Paradigm® Insulin Pumps are misbranded under section 502(t)(2) of the Act [21 U.S.C. 352(t)(2)], in that your firm failed or refused to furnish material or information respecting the device that is required by or under section 519 of the Act, 21 U.S.C. 360i, and 21 C.F.R. Part 803 - Medical Device Reporting (MDR) regulation. Significant deviations include, but are not limited to, the following:

5) Failure to report to FDA no later than 30 calendar days after the day that you receive or otherwise become aware of information, from any source, that reasonably suggests that a device that you market: (1) may have caused or contributed to a death or serious injury; or (2) has malfunctioned and this device or a similar device that you market would be likely to cause or contribute to a death or serious injury, if the malfunction were to recur, as required by 21 CFR 803.50(a).

For example:

a) Complaint No. **(b) (4)** states that the reported complaint was not reportable as an MDR to the FDA based on testing of the returned MiniMed Paradigm® Insulin Pump. Information in the complaint indicated that the patient was hospitalized for diabetic ketoacidosis allegedly following battery problems with the pump. The complaint file states that analysis of the pump did not find a battery problem. Your firm concluded that although "information does suggest that a device malfunction occurred," the malfunction was unlikely to result in death or injury if it were to recur

However, a review of the MDRs submitted by your firm to the FDA through MedWatch shows that your firm has submitted serious injury MDRs with a diagnosis of diabetic ketoacidosis resulting from the use of the MiniMed Paradigm® Insulin Pump. Since your firm has previously reported these MDRs where a patient had been hospitalized for diabetic ketoacidosis from the use of the MiniMed Paradigm® Insulin Pump and your firm received a complaint of a similar nature, this device malfunction, if it were to recur, would be likely to cause or contribute to the same serious injury. Furthermore, under 21 CFR 803.3, "*Caused or contributed* means that a death or serious injury was or may have been attributed to a medical device, or that a medical device was or may have been a factor in a death or serious injury...."

Based on the information in the complaint file, device failure or malfunction may have contributed to or caused the user's hospitalization and the device's malfunction would be likely to cause or contribute to a death or serious injury, if the malfunction were to recur. As a result, this serious injury is a reportable MDR event under 21 CFR 803.50(a). Your firm did submit MDR **(b) (4)** for this complaint. The "Date of Event" and the "Date of Report" are listed as May 30, 2007. Your firm reported this as a serious injury on the Mandatory Reporting Form, FDA-3500A, on November 14, 2008, which is 18 months after the day that your firm received information of an MDR reportable event.

b) Complaint **(b) (4)** states that the reported complaint was not reportable as an MDR to the FDA based on testing of the returned MiniMed Paradigm® Insulin Pump. The information in the complaint indicated that the user contacted your firm because the user had a blood glucose level of 456, and that the user's MiniMed Paradigm® Insulin Pump had failed to alarm when it stopped delivering insulin. The user was

subsequently hospitalized and diagnosed with diabetic ketoacidosis. Follow-up revealed that the user had trouble keeping the user's blood glucose level down, and when the user replaced infusion sets, the cannulas were bent. The complaint record states that, **(b) (4)** Under 21
CFR 803.3, "*Caused or contributed* means that a death or serious injury was or may have been attributed to a medical device, or that a medical device was or may have been a factor in a death or serious injury...." In this instance, the patient had complained of a potential device failure, and the patient was subsequently hospitalized for diabetic ketoacidosis. Based on the information in the complaint file, because your firm was aware of information that reasonably suggested that the user's MiniMed Paradigm® Insulin Pump may have caused or contributed to a serious injury, you were required to report this event to FDA as an MDR within 30 calendar days of receiving or otherwise
becoming aware of this information, under 21 CFR 803.50(a).

We have reviewed your responses dated January 20,2009, and March 31, 2009, and our conclusions follow:

Your responses state that MDR reports were submitted for the complaints identified above. Your firm has also updated your procedure
(b) (4) *Medical Device Report (Effective Date: December 17, 2008)*, to reflect new criteria for MDR reporting, and re-trained your employees on the new procedure on December 16, 2008. The adequacy of your corrective and preventive actions will be determined during the next inspection.

6) Failure to have a person who is qualified to make a medical judgment reasonably conclude that a device did not cause or contribute to a death or serious injury, or that a malfunction would not be likely to cause or contribute to a death or serious injury if it were to recur, as required by 21 CFR 803.20(c)(2). Persons qualified to make a medical judgment include physicians, nurses, risk managers, and biomedica engineers, under 21 CFR 803.20(c)(2).

For example:

Our investigators determined that a product reporting specialist was making decisions about MDR reportability for the MiniMed Paradigm® Insulin Pumps. The training record for this particular employee showed that this person only had a high school diploma with some additional in-house training.

Your responses dated January 20,2009 and March 31, 2009, did not address this charge because it was not included in the FDA 483 issued to you on December 15, 2008. The adequacy of your corrective and preventive actions will be determined during the next inspection.

You should take prompt action to correct the violations addressed in this letter. Failure to promptly correct these violations may result in regulatory action being initiated by the Food and Drug Administration without further notice. These actions include, but are not limited to, seizure, injunction, and/or civil money penalties. Also, federal agencies are advised of the issuance of all Warning Letters about devices so that they may take this information into account when considering the award of contracts. Additionally, premarket approval applications for Class III devices to which the Quality System regulation deviations are reasonably related wil not be approved until the violations have been corrected. Requests for Certificates t Foreign Governments will not be granted until the violations related to the subject devices have been corrected.

Please notify this office in writing within fifteen (15) working days from the date you receive this letter of the specific steps you have taken to correct the noted violations, including an explanation of how you plan to prevent these violations, or

similar violations, from occurring again. Include documentation of the corrective action you have taken. If your planned corrections will occur over time, please include a timetable for implementation of those corrections. If corrective action cannot be completed within 15 working days, state the reason for the delay and the time within which the corrections will be completed.

Your response should be sent to:

U.S. Food and Drug Administration
Attn: Mrs. Maridalia Torres
District Director
466 Fernandez Juncos Avenue
San Juan, PR 00901-3223

If you have any questions about the content of this letter please contact Ms. Margarita Santiago, Compliance Officer, at (787) 474-4789.

Finally, you should know that this letter is not intended to be an all-inclusive list of the violations at your facility. It is your responsibility to ensure compliance with applicable laws and regulations administered by FDA. The specific violations noted ir this letter and in the Inspectional Observations, Form FDA 483 (FDA 483), issued at the closeout of the inspection may be symptomatic of serious problems in your firm's manufacturing and quality assurance systems. You should investigate and determine the causes of the violations, and take prompt actions to correct the violations and to bring your products into compliance.

Regarding your firm's CAPA's for the Synchromed® II Pumps that did not have the **(b) (4)** test performed on them, your firm has not indicated how it will address product that is currently distributed to customers. FDA's review of your firm's investigation report(NCR **(b) (4)** did not reveal any evidence to demonstrate that **(b) (4) w**as tested in subsequent manufacturing steps to verify that the safety mechanism performed as intended. As stated in the charges above, **(b) (4)** Synchromed® II Pumps on which the **(b) (4)** was not performed were distributed to customers. Should your firm undertake a voluntary correction or removal for the Synchromed® II Pumps where **(b) (4)** the was not performed, it must submit a written report to FDA within 10 working days of initiating such an action, as specifie by 21 CFR 806.10(a) & (b). See 21 CFR part 806 for additional information about correctives and removals.

In addition to the above charges, our inspection revealed that your firm uses one manufacturing process system for both the Synchromed® II Pumps and the MiniMe Paradigm® Insulin Pumps. To the extent that any of the above CGMP violations for the Synchromed® II Pumps also implicate the MiniMed Paradigm® Insulin Pumps, your corrective actions should address and extend to the manufacturing procedures of the MiniMed Paradigm® Insulin Pumps.

Sincerely,
/S/
Maridalia Torres Irizarry
District Director
San Juan District

Enclosure: Form FDA 483

cc: Mr. Manuel Santiago
Vice President
Medtronic Puerto Rico Operations Company

Call Box 4070
Juncos, PR 00777

cc: HFC-210 (electronic via CMS)
HFZ-333 Nikhil Thakur, CDRH
HFI-35 (redacted via CMS)
HFR-SE1
DD (MTI)
DIB (VM)
CSO (Marilyn Santiago)
EF (3004369318)
CBRF
CB WL File

MS/meb: 06-01-2009

H:\Compliance Branch\Compliance Officers\Santiago\medtronic\Medtronic WL 2009-08 dated 06-01-2009.doc

Exhibit 5

DEPARTMENT OF HEALTH AND HUMAN SERVICES
FOOD AND DRUG ADMINISTRATION

DISTRICT ADDRESS AND PHONE NUMBER	DATE(S) OF INSPECTION
466 Fernandez Juncos Ave. San Juan, PR 00901-3223 (787)-474-9500 Fax:(787) 729-6809 Industry Information: www.fda.gov/oc/industry	11/12/2008 - 12/15/2008* FEI NUMBER 3004369318

NAME AND TITLE OF INDIVIDUAL TO WHOM REPORT ISSUED

TO: Manuel A. Santiago, Vicepresident Medtronic Puerto Rico Operations Co.

FIRM NAME	STREET ADDRESS
Medtronic Puerto Rico Operations Company	Road 31 Km 24ceiba Norte Industrial Par
CITY, STATE, ZIP CODE, COUNTRY	TYPE ESTABLISHMENT INSPECTED
Juncos, PR 00777	Device Manufacturer

This document lists observations made by the FDA representative(s) during the inspection of your facility. They are inspectional observations, and do not represent a final Agency determination regarding your compliance. If you have an objection regarding an observation, or have implemented, or plan to implement, corrective action in response to an observation, you may discuss the objection or action with the FDA representative(s) during the inspection or submit this information to FDA at the address above. If you have any questions, please contact FDA at the phone number and address above.

The observations noted in this Form FDA-483 are not an exhaustive listing of objectionable conditions. Under the law, your firm is responsible for conducting internal self-audits to identify and correct any and all violations of the quality system requirements.

DURING AN INSPECTION OF YOUR FIRM WE OBSERVED:

Production and Process Controls

OBSERVATION 1

Finished devices were released for distribution prior to completion of activities required in the Device Master Record.

Specifically,

Synchromed II Implantable drug pumps were released for distribution and implanted although some required activities were not completed. For example, investigation under (b) (4) found that several implantable pumps, including serials NGV300069H, NGV301133H, NGP302823H, NGV300225h, NGV401554H, NGV4022253H , NGP307091H, NGP301055H, and NGP304851H were released to the market without being filled with propellant as required by (b) (b) (4) The investigation found that these devices were never filled with propellant and this was not discovered in the propellant weight check during manufacturing.

A separate investigation NCR (b) (4) found that (b) (4) Synchromed II implantable pumps manufactured between October 2006 to May 2008 were also released without testing their Over Pressure Mechanism (OPM) as required by (b) (4) A global hold o (b) (4) was issued, but most of the devices had already been implanted.

The investigation also found that some of these devices did not go through the (b) (4) as required by (b) (4)

SEE REVERSE OF THIS PAGE	EMPLOYEE(S) SIGNATURE	DATE ISSUED
	Lisa M Lopez, Investigator Marilyn Santiago, Investigator	12/15/2008

DEPARTMENT OF HEALTH AND HUMAN SERVICES
FOOD AND DRUG ADMINISTRATION

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Juncos, PR 00777	Device Manufacturer

OBSERVATION 2

The device history record does not demonstrate the device is manufactured in accordance with the device master record.

Specifically, established manufacturing procedures are not always followed. For example:

- Ten out of thirteen device history records reviewed for Synchromed II implantable pumps show discrepancies between the device history record and procedure (b) (4) as follows:
  - Device History Records for implantable drug pumps serials, (b) (4) and, found that the devices were dispatched into the (b) (4) had already started.
  - Device history records for pumps serial numbers: (b) (4) (b) (4) and (b) (4) show that the verification of the (b) (4) and verification of the (b) and (b) (4) were recorded after the (b) (b) (4) had ended and not before as required by (b) (4)
  - Procedure (b) (4) includes a step for batch (b) (4) that does not apply to the Juncos facility; therefore, it is never followed.
- On November 6, 2007 (b) (4) was opened to address (b) (4) records that were not signed by a reviewer. NCR (b) (4) was opened to investigate and implement actions. Actions were taken, including reviewing the procedure and training. However, on June 27, 2008 (b) (4) records were found again without the reviewer's signature as required by (b) (4) Furthermore, visual inspection done under a separate investigation, NCR (b) (4) found at least 331 devices on hand for which (b) sampling was not done correctly per (b) (4) These discrepancies were not captured during routine process control measures.

Corrective and Preventive Actions (CAPA)

OBSERVATION 3

Not all of the actions needed to correct and prevent the recurrence of nonconforming product and other quality problems have been identified.

Specifically,

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	Lisa M Lopez, Investigator Marilyn Santiago, Investigator	12/15/2008

DEPARTMENT OF HEALTH AND HUMAN SERVICES
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Juncos, PR 00777	Device Manufacturer

On January 16, 2007 Non-conformance Evaluation Request (b) (4) was opened to address Synchromed II implantable pumps that were released to market without propellant and evaluated under (b) (4) (received 5/24/06) and (b) (4) (received, 7/26/06). (b) (4) was also received on 12/27/06 and was eventually included in the investigation. Two of these three devices were implanted and had to be explanted because of issues related to lack of propellant. These devices were confirmed by laboratory analysis as missing the propellant fill step at manufacturing. A local CAPA, NCR (b) was opened in January 19, 2007 to fully investigate the issue and implement corrective actions.

Several actions were implemented under this NCR; however, NCR (b) (4) did not address Synchromed II pumps that were still under the firm's control, nor those already distributed. For instance, Synchromed II pump serial NGP304851H was manufactured on January 22, 2007 and implanted on February 22, 2007. This device had to be explanted and replaced because of issues related to not having propellant.

On 4/20/2007, Synchromed II pump serial NGP307091H was completed and placed on local inventory. This pump was shipped from Juncos, PR on April 20, 2007 and implanted in October 22, 2007. This device also had to be explanted and replaced because it was never filled with propellant at manufacturing, eventhough it was distributed after the implementation of the manufacturing process change that corrected the issue of detection of defective devices.

However, justification for not conducting a field action plan was not documented under NCR (b) (4) The NCR was closed on July 2007. A Health Hazard Evaluation was not conducted until February of 2008 and a field action plan was not approved until May 7, 2008.

Furthermore, the investigation and proposed actions failed to address other manufacturing steps in which defective pumps may also be mistakenly released and because of data entry errors may not be identified.

For example, on June 26, 2008 (b) (4) and (b) (4) were opened to address Synchromed II pumps that were released to the next stage without completion of the OPM and the CAP testing eventhough their manufacturing records indicate that these steps were completed. The investigation found that more than 3,400 implantable pumps may have been affected, including over 3,000 already distributed, manufactured in their majority within October 2006 to May 2008.

Another instance of devices released to the next stage without completion of a previous step was recorded in (b) (4) (b) , when in August 30, 2007, 8 units were released from the step (b) (4) without completion of the process on the units. In this case, all units were captured before release for distribution; however, the investigation and action did not expand to other steps where the same issue may occur.

OBSERVATION 4

An MDR report was not submitted within 30 days of receiving or otherwise becoming aware of information that reasonably suggests that a marketed device may have caused or contributed to a death or serious injury.

Specifically,

An MDR was not submitted for Diabetes Ketoacidosis requiring hospitalization while using a Paradigm Insulin Pump and

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	Lisa M Lopez, Investigator Marilyn Santiago, Investigator	12/15/2008

DEPARTMENT OF HEALTH AND HUMAN SERVICES
FOOD AND DRUG ADMINISTRATION

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reported in Complaints (b) (4) and (b) (4) Furthermore, Complaint (b) (4) was received on 5/30/07 for Diabetes Ketoacidosis requiring hospitalization while using the Paradigm Insulin Pump; however, an MDR was not submitted until November 14, 2008.

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	Lisa M Lopez, Investigator Marilyn Santiago, Investigator	12/15/2008

DEPARTMENT OF HEALTH AND HUMAN SERVICES
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Juncos, PR 00777	Device Manufacturer

Observation Annotations

Observations intentionally left blank.

*** DATES OF INSPECTION:**
11/12/2008(Wed), 11/13/2008(Thu), 11/14/2008(Fri), 11/18/2008(Tue), 11/19/2008(Wed), 11/24/2008(Mon), 11/25/2008(Tue), 11/26/2008(Wed), 12/01/2008(Mon), 12/02/2008(Tue), 12/03/2008(Wed), 12/04/2008(Thu), 12/05/2008(Fri), 12/08/2008(Mon), 12/09/2008(Tue), 12/11/2008(Thu), 12/12/2008(Fri), 12/15/2008(Mon)

SEE REVERSE OF THIS PAGE	EMPLOYEE(S) SIGNATURE	DATE ISSUED
	Lisa M Lopez, Investigator Marilyn Santiago, Investigator	12/15/2008

The observations of objectionable conditions and practices listed on the front of this form are reported:

1. Pursuant to Section 704(b) of the Federal Food, Drug and Cosmetic Act, or

2. To assist firms inspected in complying with the Acts and regulations enforced by the Food and Drug Administration

Section 704(b) of the Federal Food, Drug, and Cosmetic Act (21 USC 374(b)) provides:

"Upon completion of any such inspection of a factory, warehouse, consulting laboratory, or other establishment, and prior to leaving the premises, the officer or employee making the inspection shall give to the owner, operator, or agent in charge a report in writing setting forth any conditions or practices observed by him which, in his judgement, indicate that any food, drug, device, or cosmetic in such establishment (1) consists in whole or in part of any filthy, putrid, or decomposed substance, or (2) has been prepared, packed, or held under insanitary conditions whereby it may have become contaminated with filth, or whereby it may have been rendered injurious to health. A copy of such report shall be sent promptly to the Secretary."

Exhibit 6

Medtronic, Inc. 7/17/12

Department of Health and Human Services

Public Health Service
Food and Drug Administration
Minneapolis District Office
Central Region
250 Marquette Avenue, Suite 600
Minneapolis, MN 55401
Telephone: (612) 334-4100
FAX: (612) 334-4142

July 17,2012
WARNING LETTER
Refer to MIN 12- 39

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Omar S. Ishrak
Chief Executive Officer
Medtronic, Inc.
710 Medtronic Parkway
Minneapolis, Minnesota 55432

Dear Mr. Ishrak:

During an inspection of your firm, Medtronic Neuromodulation, located at 7000 Central Avenue NE, in Minneapolis, Minnesota, from March 14 through May 9, 2012, investigators from the United States Food and Drug Administration (FDA) determined that your firm manufactures implantable drug infusion systems, deep brain stimulation systems, spinal cord neurostimulation systems, nerve monitoring products, and other neurological medical/surgical products. Under section 201(h) of the Federal Food, Drug, and Cosmetic Act (the Act), 21 U.S.C. § 321(h), these products are devices because they are intended for use in the diagnosis of disease or other conditions or in the cure, mitigation, treatment, or prevention of disease, oı are intended to affect the structure or function of the body.

This inspection revealed that these devices are adulterated within the meaning of section 501(h) of the Act, 21 U.S.C. § 351(h), in that the methods used in, or the facilities or controls used for, their manufacture, packing, storage, or installation are not in conformity with the Current Good Manufacturing Practice (CGMP) requirements of the Quality System (QS) regulation found at Title 21, Code of Federal Regulations (21 CFR), Part 820. We received a response from Thomas M. Tefft, Senior Vice President and President, and Jill Smith, Vice President, Quality, dated May 30,2012 (and updated on June 29, 2012) concerning our investigators' observations noted on the Form FDA 483, List of Inspectional Observations, issued t

Mr. Tefft on May 9, 2012. We address the response below, in relation to each of the noted violations. These violations include, but are not limited to, the following:

1. Failure to establish adequate procedures for corrective and preventive action as required by 21 CFR 820.100(a). Specifically:

A) You have not identified the actions to correct and prevent recurrence of non-conforming product. GCAPA 1485, opened October 26, 2007, relates to motor corrosion resulting in device field failure (motor stall). Within the Investigation Report for SynchroMed II Pump Corrosion (NDHF1119-88863), it states "corrosion[...] can result in partial or complete removal of gear teeth." This can "seize" the motor altogether or "gear wheel [...]will continue to rotate, bu there may be no drug delivery in the region of missing teeth." Identified corrosion issues include wheel 3 corroded teeth, gear binding, gear shaft binding, and bearing binding. This GCAPA includes 567 complaints and has not been closed.

FDA 483 Response: Your response describes actions taken to mitigate the risk of device failure through communication to healthcare professionals and decreased susceptibility of the device to corrosion. However, we have concluded that your response is not adequate. Health Hazard Analysis for SynchroMed II Pump Motor Corrosion (CAPA #1485), NDHF1119-101573, Version 4.0, predicts an additional **(b)(4)** patient injuries resulting from device failure due to motor corrosion. This analysis was based only on confirmed failures (via returned product analysis) due to corrosion; and thus, the number of additional patient injuries will likely be higher than predicted.

Your response also discusses the activities of your Corrosion Task Force (CTF) and your planned in-depth review of SynchroMed II complaints alleging a motor stall without a product. CAPA 1485 and the Health Hazard will be updated. **(b)(4)**

FDA requests a prompt meeting with you to discuss the pump motor corrosion failure mode and the scope and timing of corrective actions to address this ongoing problem. We propose Friday, September 7, 2012, at 10:00 a.m. EST for this meeting to be held at the Center for Devices and Radiological Health, 10903 New Hampshire Avenue, Building 66, Silver Spring, Maryland. Please contact John Diehl, Regulatory Operations Officer,· (301) 796-0993, to confirm your participation.

B) The "Corrective and Preventive Action (CAPA) Procedure," (QMS1861) states "assess quality issues, trends, and potential or actual product or process nonconformities." This was not completed in that data used for evaluation was incomplete per citations 2 and 3 below.

FDA 483 Response: Your response states that you updated Product Event (PE) inclusion criteria for CAPA 1485 to include appropriate PEs associated with non-returned product. The CAPA 1485 Health Hazard Analysis will be updated accordingly, and the field corrective action decision will be re-evaluated.

You also updated the form for PE inclusion criteria to require a documented rationale when PEs with non-returned product will not be assigned to the applicable CAPA. Further, you stated that upon completion of remediation activities to address FDA-483 observations 2 and 3, you will re-evaluate the impact to all open product-related CAPAs, monitors, and trends.

We consider your proposed corrective actions to be appropriate; however, a follow-up inspection will be necessary to evaluate the implementation and effectiveness of the actions.

2. Failure to establish adequate procedures for receiving, reviewing, and evaluating complaints by a formally designated unit, which is required by 21 CFR 820.198(a). Specifically, Patient and Technical Services (PATS) did not document complaint information for incoming calls per the procedure "Customer Response Team Systems [CRTS]" (PTS6026). A complaint is defined as "Any written, electronic or oral communication that alleges deficiencies related to the identity, quality, durability, reliability, safety, effectiveness, or performance of a device ... " and the Patient and Technical Consultant "Identifies and documents any report of a Complaint." Complaint information received during a call was not documented in the written call record for the following:

Call Number	Information Received in Phone Call Not Documented on Resultant Written Call Record
2685890	A doctor requested information on whether catheter removal is an option with a granuloma. This call was not handled as a complaint for a granuloma/inflammatory mass.
2757084	Health care provider called to report a motor stall and that the patient experienced withdrawal symptoms. Withdrawal symptoms were not documented on the written call record or resulting complaint.
2721299	Caller stated that Fentanyl was in pump. The drug was not documented on the written call record and the resulting complaint states drug description is "Unknown."
2739594	Caller reported a motor stall with no recovery. Caller stated Baclofen as the medication in the pump. The drug was not documented on the written call record and the resulting complaint states drug description is "Unknown."
2702294	Caller reported a vibration sensation and stated that "pump is not working." The pump not working was not documented on the written call record or resulting complaint.
2724877	Caller reported a vibration sensation and that pump is "not working for pain, like it has all these years." Pump not working for pain was not documented on the written call record or resulting complaint.
2694377	Caller reported that pain became worse since device implantation which was not documented on the written call record or resulting complaint.
2579227	Caller reported Baclofen is in the pump. The drug was not recorded on the written call record and the resulting complaint states drug description is "Unknown."
2718965	Caller reported a granuloma and stated within the call that "the medicine worked in the beginning, but over time, it made me worse. And I didn't know it until it stopped working." The information about the medication was not captured on the written call record or resulting complaint.

FDA 483 Response: Your response states that you reviewed the audio call records and revised the written records accordingly. The events were reviewed again to determine whether Medical Device Reports (MDRs) or Adverse Drug Experience

Reports (ADRs) should be filed or supplemented. Reports were submitted when required. Lastly, assigned codes were re-evaluated and revised if necessary.

Broader corrective and preventive actions completed or promised include training, management review of calls and CRTS records, procedural changes, and audits of Patient and Technical Services procedures and processes.

Your corrective actions appear to be appropriate; however, a follow-up inspection will be necessary to evaluate implementation and effectiveness.

3. Failure to review, evaluate and investigate, where necessary, complaints involving the possible failure of a device to meet any of its specifications. This is required by 21 CFR 820.198(c). Specifically:

A) Product Performance Specialists did not adequately evaluate complaints.

(1) Per the procedure "Product Performance Specialist Work Instruction," (RPMWI1666) non-returned product with suspected non-conformance is to be formally investigated. Eleven of 11 closed complaints involving motor stalls with unknown cause and no returned product were not formally investigated nor was there an adequate explanation for why no investigation occurred. These complaints include:

500073583: Motor stall, pain reported, volume discrepancy
500099975: Motor stall, nausea, vomiting
500047736: Motor stall, volume discrepancy, withdrawal, pump explanted
500079921: Motor stall, volume discrepancy, pain
500050534: Motor stall, underdose, pump explanted
500031251: Motor stall, return of symptoms
500054080: Motor stall, increased pain, underdose symptoms, pump explanted
500024556: Motor stall, pain reported, pump explanted
500022409: Motor stall, underdose, pump explanted
700099823: Motor stall, no therapeutic effect
700062012: Motor stall, withdrawal symptoms

FDA 483 Response: Your response states that the Neuromodulation Complaint Evaluation Team (NCET) initiated an investigation and recommended that PEs alleging motor stall be assessed and dispositioned to open CAPAs, CAPA monitors, Data Monitors, and/ or PITCH Events. Additional broader corrective actions include development of improved criteria for complaint investigations and revisions to the Risk Evaluation Board (REB) and Product Performance Trend Reporting procedures.

Your corrective actions appear to be appropriate; however, a follow-up inspection will be necessary to evaluate implementation and effectiveness.

(2) An investigation into reports of vibrating pumps entitled "WATCHLIST-Patient Reports of Pump Vibrations" was opened on March 30, 2007, and closed February 7, 2008. This investigation included 19 separate complaints. It was determined that "the likely cause for these vibrations is a physiological sensation due to surgery and the healing process."

The following complaints involving "vibration" sensations were not investigated nor was there an adequate explanation for why no investigation occurred:

Complaint Number	Implant Date	Notified Date	Description
700074933	6/1/2006	12/2/2011	Inflammatory mass, vibrating sensation
500083053	3/9/2010	4/29/2011	Vibrating sensation, caller reported pump "hasn't been

			working"
500078876	4/28/2007	7/11/2011	Vibration, caller reported pump "not working like it used to"
500047418	8/28/2007	10/6/2011	Abdominal vibration, withdrawal, catheter punctures
500205241	1/7/2010	10/3/2011	Vibration sensation
500167917	3/7/2011	8/10/2011	Painful vibration in abdomen
700074795	11/7/2007	12/1/2011	Vibration felt in stomach
700078229	11/30/2005	12/14/2011	Vibration sensation, patient reports pump not working
700085549	2/28/2011	1/13/2012	Vibration sensation
500038321	1/17/2007	1/3/2011	Vibration sensation, increased weakness
500037974	4/12/2004	12/16/2010	Vibration sensation, catheter kink
500073385	12/21/2007	4/23/2010	Vibration sensation
500091223	6/30/2009	1/18/2011	Vibration sensation
500046267	5/26/2010	10/6/2011	Feeling vibration, pain, blisters, and fluid in front of pump
500184025	3/24/2011	6/29/2011	Vibration sensation in abdomen down to lower groin
500099975	5/22/2007	3/15/2010	Vibration sensation, 3 months later patient experienced motor stall

FDA 483 Response: Your response states that Neuromodulation initiated a PITCH (Preliminary Investigation and Trending for Complaint Handling) event to investigate potential causes and similarities I differences related to allegations of vibration with the SynchroMed II pump.

Your corrective actions appear to be appropriate; however, a follow-up inspection will be necessary to evaluate implementation and effectiveness.

(3) The procedure "Complaint Evaluation and Investigation Process" (RPM1234) states "assign appropriate functional area(s) to further investigate the issue."

Complaint 500082715 was not assigned to the functional area of Medical Safety. The complaint description states "HCP reports a death of a patient that had a gastric stimulator implanted. He died on Monday, according to what was reported to us he could not swallow, he had severe acid in his body."

FDA 483 Response: Neuromodulation re-reviewed the complaint and clearly documented the investigation activities. The complaint was reviewed by a Medical Safety physician, and an MDR was filed for the event. In addition, you promised to implement a more detailed process for medical review of complaints and develop a remediation plan for review of prior complaint flies.

Your actions are appropriate; however, a follow-up inspection will be necessary to evaluate implementation and effectiveness.

(4) The procedure "Product Performance Specialist Work Instruction" (RPM 1666) states "check for relationship of issue to existing investigations (e.g. [...] CAPA or Data monitor)."

a. Complaint 500037816 was a returned product due to volume discrepancies at multiple refills. The analysis stated "corrosion and residue were seen on both sides of gear wheel." This complaint was not added to GCAPA 1485 for motor corrosion.

b. Complaint 500091325 stated the following on the Medical Device Report: "further information received from the healthcare provider indicated she believed the lead had migrated." This complaint was not added to the Data monitor for "migration" for urinary InterStim.

FDA 483 Response: Your firm re-reviewed complaints 500037816 and 500091325 and documented the investigations and conclusions. For complaint 500091325, coding was corrected and the monitor was updated.

Your corrective actions appear to be appropriate; however, a follow-up inspection will be necessary to evaluate implementation and effectiveness.

B) Coding of similar complaints is inconsistent.

Procedure "Complaint and Adverse Event Coding and Master Data Management Process" (RPMWI1833) describes "what codes will be assigned in the PEs" (complaints) that could subsequently be used for trend analysis. Each complain is to receive a **(b)(4)** code defined as:

(b)(4)

Of the following 14 complaints relating to similar motor stall issues (700062012,500082653,500024556,500099975,500073583,500047736, 500079921,500052853,500054080,500050534,500075490,500031526, 700095413,500031251:

- 4 received a **(b)(4)**
- 10 received **(b)(4)**
- 2 received a **(b)(4)**
- 9 received a **(b)(4)**
- 3 received a **(b)(4)**

Of the following 10 complaints relating to similar inflammatory mass issues (500166572,500054756,500050731,500071678,500093511,500075527, 500093970, 500043194, 500074339, 700069121):

- 5 received a **(b)(4)**
- 1 received a **(b)(4)**
- 2 received a **(b)(4)**
- 2 received a **(b)(4)**
- 6 received a **(b)(4)**
- 3 received a **(b)(4)**
- 1 received a **(b)(4)**

FDA 483 Response: Your response states that you implemented a secondary review of coding decisions to ensure accuracy and consistency **(b)(4)**. Neuromodulation committed to a comprehensive assessment processes and to

develop a revised coding strategy. Remediation of infusion system files will also be conducted. The specific complaints cited above involving motor stall and inflammatory mass were re-reviewed, and codes were revised if necessary.

Your corrective actions appear to be appropriate; however, a follow-up inspection will be necessary to evaluate implementation and effectiveness.

C) Trending of complaint data/ coding for evaluation was not completed per procedures:

(1) Devices that are not returned are trended per the procedure "Complaint and Adverse Event Trend Reporting" (RPMWI1832). This was not completed for 2011 and 2012 for the following products: infusion systems, neurostimulation for movement disorder (DBS), neurostimulation for pain, InterStim therapy, Enterra therapy, and Prostiva.

FDA 483 Response: Neuromodulation trended complaint PEs without an associated product return. Your firm also developed a new analysis approach to replace the trend "Device not returned, further investigation not possible without device," previously required by RPMWI1832. An **(b)(4)** to perform statistical analysis of post-market surveillance data sources is being implemented.

Your corrective actions appear to be appropriate; however, a follow-up inspection will be necessary to evaluate implementation and effectiveness.

(2) "Known Expected Events" are trended per the procedure Adverse Event Trend Reporting" (RPMWI1832), using a **(b)(4)** code. Due to a transition to a new complaint handling computer system, the following complaints were missing an **(b)(4)** code and were not included in trending:

a. 99 complaints for inflammatory mass including, 500037107, 500093511,500082334,500075104,500050731,500095044, 500071809,500071678,500054756,500051396,500075527, 500039586,500043194,500165916,700069121,500093970, 500074339,500166572,500076576,and500081542.

b. 88 complaints for Dysarthria. When this data was added to the system, three separate signals exceeded threshold.

c. 11 complaints for Loculation.

d. 104 complaints for Incision Pain.

FDA 483 Response: Your firm re-reviewed all complaints that were affected by the transition/conversion issue, and missing **(b)(4)** codes were added to the files. New trending was conducted and resulting signals were investigated. On a broader scale, data conversion procedures were revised and implemented to address the root cause of the problem.

Your corrective actions appear to be appropriate; however, a follow-up inspection will be necessary to evaluate implementation and effectiveness.

(3) The threshold limit assigned to trends is not described in the procedure "Complaint and Adverse Event Trend Reporting" (RPMWI1832).

FDA483 Response: Your response states that you updated RPMWI1832 to include instructions for **(b)(4)**

A follow-up inspection will be necessary to evaluate implementation and effectiveness of this corrective action.

D) Data is not evaluated per procedure to determine if signals exist that would require further investigation.

The procedure "Complaint and Adverse Event Trend Reporting" (RPMWI 1832) states "Evaluate the data and determine if any results meet the signal investigation requirement(s)." This was not completed due to incomplete data noted above.

FDA 483 Response: Your response appears to be limited to the incomplete data cited above in 3. C) (2). The scope of this citation, however, is broader. We are concerned that incomplete complaint data and incorrect coding decisions

described elsewhere in this letter (e.g., citations 2 and 3) may have compromised your firm's ability to detect and investigate signals.

In response to this letter, please describe the actions that your firm is taking to ensure that you will appropriately detect and investigate all signals.

Re: FDA 483 Response to Observations 4-6: The corrective actions reported and planned appear to be adequate. Implementation and effectiveness will be evaluated during a follow-up inspection.

You should take prompt action to correct the violations addressed in this letter. Failure to promptly correct these violations may result in regulatory action being initiated by the Food and Drug Administration without further notice. These actions include, but are not limited to, seizure, injunction, and/ or civil money penalties. Also, federal agencies are advised of the issuance of all Warning Letters about devices so that they may take this information into account when considering the award of contracts. Additionally, premarket approval applications for Class III devices to which the Quality System regulation deviations are reasonably related will not be approved until the violations have been corrected. Requests for Certificates to Foreign Governments will not be granted until the violations related to the subject devices have been corrected.

We are requesting that you submit to this office on the schedule below, certification by an outside expert consultant that he/she has conducted an audit of your establishment's manufacturing and quality assurance systems relative to the requirements of the device Quality System regulation (21 CFR Part 820). You should also submit a copy of the consultant's report and your certification that you have reviewed the consultant's report and that your establishment has initiated or completed all corrections called for in the report. The initial certifications of audit and corrections and subsequent certifications of updated audits and corrections (if required) should be submitted to this office by the following dates:

- Initial certifications by consultant and establishment - by January 17, 2013
- Subsequent certifications of updated audits and corrections- by January 17, 2014, and 2015

Please notify this office in writing within fifteen (15) working days from the date you receive this letter with an update on the specific steps you have taken to correct the noted violations, including an explanation of how you plan to prevent these violations, or similar violations, from occurring again. Include documentation of the corrective actions you have taken. If your planned corrections will occur over time, please include a timetable for implementation. If corrective actions cannot be completed within 15 working days, state the reason for the delay and the time within which the corrections will be completed.

Your response should be sent to Timothy G. Philips, Compliance Officer, at the address on this letterhead. If you have any questions about the content of this letter please contact Mr. Philips at (612) 758-7133.

Finally, you should know that this letter is not intended to be an all-inclusive list of the violations at your facility. It is your responsibility to ensure compliance with applicable laws and regulations administered by FDA. The specific violations noted in this letter and in the Inspectional Observations, Form FDA 483, issued at the closeout of the inspection may be symptomatic of serious problems in your firm's manufacturing and quality assurance systems. You should investigate and determine the causes of the violations and take prompt actions to correct the violations and to bring your products into compliance.

Sincerely,

/s/

Michael Dutcher, DVM
Director
Minneapolis District

Page Last Updated: 08/20/2012
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Links on this page:

Exhibit 7

DEPARTMENT OF HEALTH AND HUMAN SERVICES
FOOD AND DRUG ADMINISTRATION

DISTRICT ADDRESS AND PHONE NUMBER	DATE(S) OF INSPECTION
250 Marquette Avenue, Suite 600 Minneapolis, MN 55401 (612) 334-4100 Fax:(612) 334-4134 Industry Information: www.fda.gov/oc/industry	02/14/2013 - 04/03/2013* FEI NUMBER 2182207

NAME AND TITLE OF INDIVIDUAL TO WHOM REPORT ISSUED

TO: Omar S. Ishrak, Chairman and Chief Executive Officer

FIRM NAME	STREET ADDRESS
Medtronic Neuromodulation	7000 Central Ave NE
CITY, STATE, ZIP CODE, COUNTRY	TYPE ESTABLISHMENT INSPECTED
Minneapolis, MN 55432-3568	Medical Device Manufacturer

This document lists observations made by the FDA representative(s) during the inspection of your facility. They are inspectional observations, and do not represent a final Agency determination regarding your compliance. If you have an objection regarding an observation, or have implemented, or plan to implement, corrective action in response to an observation, you may discuss the objection or action with the FDA representative(s) during the inspection or submit this information to FDA at the address above. If you have any questions, please contact FDA at the phone number and address above.

The observations noted in this Form FDA-483 are not an exhaustive listing of objectionable conditions. Under the law, your firm is responsible for conducting internal self-audits to identify and correct any and all violations of the quality system requirements.

DURING AN INSPECTION OF YOUR FIRM WE OBSERVED:

OBSERVATION 1

Products that do not conform to specifications are not adequately controlled.

Specifically,

A) Your firm distributed nonconforming SC catheters, and failures due to the nonconforming products have resulted in serious adverse events. From September 10, 2012 to March 25, 2013, approximately (b) (4) SC catheters that do not confirm to the current product specifications have been distributed. Regulatory approval was received for Supplement 136 to PMA P860004 on December 15, 2011 to change the design of SC Catheter models 8709SC, 8731SC, 8596SC, and 8578 to mitigate a known field issue associated with CAPA 1507- SC Catheter Occlusion. This design change was implemented via ECO 12-00985, dated March 6, 2012, and the new revisions of Catheter models were released to the field in September 2012. However, the previous SC catheter models which do not conform to the current design have continued to be distributed and have attributed to 60 complaints of catheter occlusion since September 2012.

B) Your firm distributed approximately (b) (4) lead kits containing nonconforming lead caps to the field from 19 NOV 2012 to 29 JAN 2013. On 31 OCT 2012 and 19 NOV 2012, your firm performed testing on the DBS lead cap that showed the (b) (4) The product specification contains (b) (4) requirement of (b) (4)

Per your procedure "QMS1340 TLP Escalating Quality Issues and Handling Nonconformances" ver. 9.0 dated 1/11/12, when

SEE REVERSE OF THIS PAGE	EMPLOYEE(S) SIGNATURE	DATE ISSUED
	Jessica L. Johnson, Investigator Jessica L. Johnson	4/3/13
	Susan M. Matthias, Investigator Susan M. Matthias 4/3/13	04/03/2013

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a product nonconformance is confirmed, the product is to be segregated and place on hold. If the product has been distributed, the risk assessment decision must be documented within 30 days. The Risk Assessment for DBS Lead CAP (b) (4) Issue (GCAPA 145631) was not completed until 28 JAN 2013.

In addition, your procedure also requires an approved product deviation to distribute nonconforming product. A product deviation for the nonconforming DBS lead kits was not authorized until 07 FEB 2013.

OBSERVATION 2

Procedures for corrective and preventive action have not been adequately established.

Specifically,

(A) Actions needed to correct and prevent recurrence of a quality problem were identified but not implemented. For example,

(i) Feedthrough CAPA number 10594 identified actions on 02 APR 2008 via NDHF1148-98756- "Feed Through Shorting, (b) (4) Effectiveness Report" to correct and prevent recurrence of feedthrough shorting resulting in motor stalls in the SynchroMed II infusion pump. The recommended action of (b) (4) has not been implemented. Since April 2008, at least 298 serious adverse events have resulted from feedthrough shorting.

(ii) CAPA 110407-(b) (4) identified an action within the 21 JUN 2012 Risk Evaluation Board meeting minutes. The recommended action was (b) (4) . The NLT did not approve the recommendation and delayed any action until the HHA was completed ~~upon our request~~ during this inspection. 4/3/13 4/3/13. Since June 2012, at least 37 serious adverse events have been "possibly" related to the (b) (4) CAPA.

(B) The Health Hazard Assessments for high priority CAPAs with the highest patient severity of death were not completed

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Minneapolis, MN 55432-3568	Medical Device Manufacturer

in a timely fashion. Your procedure, QMS1002 TLP Corrective and Preventive Actions requires an HHA for any high priority CAPA with a patient risk. For example:

(i) "CAPA 110407 (b) (4) " was opened on 01 NOV 2011. The HHA for this CAPA was not completed until 11 MAR 13 (during this inspection.)

(ii) "CAPA 132952 (b) (4) was opened 26 June 2012. The HHA was completed on 01 FEB 13.

(C) Health Hazard Assessments have not been updated after CAPA effectiveness monitoring signaled an increase in the rate of occurrence as evidenced by CAPAs 3064, 7685, and 1507. QMSWI14505 "CAPA Monitoring" states, "Update Health Hazard Analysis document MEDN-0255, if required by identification of a new hazard / harm and or an increase in severity or occurrence defined by a change in color on the Risk Index table."

(i) In February 2011, your firm detected a signal in the CAPA 1507 monitor showing a (b) (4) . The 13 FEB 2012 High Priority CAPA Board recommended that the HHA for CAPA 1507 "SC Catheter Occlusion" be updated. The HHA has not been updated since September 2008. At least 300 complaints for this CAPA have been received since the HHA was last updated.

(ii) In February 2012, a signal was detected in the CAPA3064 monitor showing a (b) (4) . The signal investigation was not completed until February 2013, and the HHA has not been updated since March 2009. At least 140 complaints for this CAPA have been received since the HHA was last updated.

(iii) In February 2011, your firm opened a CAPA monitor for CAPA 7685 (b) (4) . In December 2011, a decision was made to update the HHA for CAPA 7685; however, the HHA has not been updated since September 2010. At least 40 complaints for this CAPA have been received since the HHA was last updated.

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	Jessica L. Johnson, Investigator 4/3/13. Susan M. Matthias, Investigator 4/03/13	04/03/2013

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(D) Your firm did not perform a complaint search for CAPA 110407-(b) (4) from December 2011 until our request during this inspection. Your procedure, QMS1861, Corrective and Preventive Action (CAPA) Procedure, versions 11.0 and 12.0 states, "NOTE: The first PE search must take place within 90 days after the CAPA Start Date…an additional PE search must be performed at least every 90 days during the investigation phase and documented in the CAPA record."

OBSERVATION 3

Design verification does not confirm that design output meets design input requirements.

Specifically, design verification testing was never performed on the DBS lead cap to verify that the (b) (4) requirement was met. A total of 103 complaints including 11 serious adverse events have been reported since the lead cap was released in May 2006.

OBSERVATION 4

Procedures for design change have not been adequately established.

Specifically, testing was not performed to verify that a design change did not adversely affect the product. Your firm changed (b) (4) on the DBS lead extensions and lead caps from a (b) (4) to a (b) (4) in January 2011. Seventy-five of the 103 complaints regarding connector block twisting and subsequent DBS lead damage have been reported since the release of the (b) (4) in February 2011.

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EMPLOYEE(S) SIGNATURE
Jessica L. Johnson, Investigator
Susan M. Matthias, Investigator

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04/03/2013

DEPARTMENT OF HEALTH AND HUMAN SERVICES
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Observation Annotations

2 JJJ 4/3/13 SMI 4/3/13

Observation 1: Promised to correct.

Observation 3: Promised to correct.

4 JJJ 4/3/13 SMI 4/3/13

4/3/13 CMI JJJ 4/3/13

Observation 2: Promised to correct.

observation 1: Blank

*** DATES OF INSPECTION:**
02/14/2013(Thu), 02/15/2013(Fri), 02/19/2013(Tue), 02/20/2013(Wed), 02/22/2013(Fri), 02/25/2013(Mon), 02/26/2013(Tue), 02/28/2013(Thu), 03/01/2013(Fri), 03/04/2013(Mon), 03/07/2013(Thu), 03/11/2013(Mon), 03/13/2013(Wed), 03/14/2013(Thu), 03/21/2013(Thu), 03/26/2013(Tue), 03/28/2013(Thu), 04/03/2013(Wed)

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Exhibit 8
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Exhibit 13

Medtronic

January 2008

Urgent: Medical Device Correction

Updated Information - Inflammatory Mass (granuloma) At or Near the Distal Tip of Intrathecal Catheters

Dear Healthcare Professional,

This letter is an update to two previous communications[1] issued by Medtronic in 2001 and 2003, and is intended to provide the medical community with the current post-market incidence of reported inflammatory mass and **information that may facilitate patient management.**

Inflammatory mass presents as a chronic inflammatory or granulomatous mass at or near the distal tip of intrathecal catheters and has been reported with the intrathecal infusion of opioids, baclofen, pharmacy-compounded drugs, and other pharmacological admixtures. The precise etiology of inflammatory mass is unknown. Clinical evaluation with MRI or histology shows an association of inflammatory mass with morphine sulfate, other opioids, and analgesic admixtures. The highest reported rate of inflammatory mass formation has been associated with the use of opioids. The most plausible etiology for inflammatory mass formation with the use of opioids, as supported by preclinical studies, relates inflammatory mass to the administration of relatively high dose and/or high concentration morphine sulfate and/or other opioids. Current available information does not definitively exclude other possible contributing factors such as other infusates, catheter design or material.

Incidence of Opioid-Related Inflammatory Mass

One study that prospectively evaluated 208 patients reported a 3% incidence of inflammatory mass[2]. Through September 2007, there has been an estimated 0.49% incidence of inflammatory mass reported to Medtronic for patients ever implanted with a drug infusion system for treatment of pain. The actual incidence is likely to be higher due to under reporting, but the extent of under reporting is currently unknown.

Based on current Medtronic analysis, the reported incidence of patients who have developed inflammatory mass (0.49%) is approximately five times higher than was reported in 2001 (0.1%). The rate of occurrence of inflammatory mass is expected to continue to increase. This may be at least partially due to the longer average duration of time that the product is implanted. Some reported cases occurred within six months, while others occurred as long as ten or more years after starting opioid therapy. Reported cases of inflammatory mass are from reports submitted to Medtronic by patients and/or health care providers, Medtronic personnel, or from scientific literature.

Table 1.0 presents a summary of the frequency of symptoms associated with 448 reports of inflammatory mass from October 1990 through September 2007. These reported patient symptoms are currently identified in the professional labeling (Appendix A). A patient may have reported more than one symptom. The most frequently reported symptoms associated with inflammatory mass are:

- decreased therapeutic response/inadequate pain relief (reported in 33.5% of patients),
- pain (reported in 32.6% of patients),
- neurological deficit/dysfunction (reported in 17.4% of patients).

Table 1.0 Summary of Symptoms Reported for Cases of Inflammatory Mass

Symptoms [a]	Number of Reports of Symptom	Percent of Cases with Symptom (n = 448)
Decreased therapeutic response/inadequate pain relief	150	33.5%
Pain	146	32.6%
Neurological deficit/dysfunction	78	17.4%
Unknown (reports did not provide the patient's condition)	74	16.5%
Paralysis/paraplegia/paresis	67	15.0%
Weakness/muscle weakness	62	13.8%
Numbness	43	9.6%
Incontinence	32	7.1%
Ambulation difficulties	12	2.7%
Urinary retention	8	1.8%
Tingling	8	1.8%
Headache	7	1.6%
Muscle spasm(s)	7	1.6%
Burning sensation	6	1.3%
Other [b]	68	15.2%

[a] There may be more than one symptom per report of inflammatory mass
[b] Multiple symptoms, each reported in less than 1% of cases of inflammatory mass

Inflammatory mass has been associated with a wide range of doses and concentrations of opioids. No dose and/or concentration of morphine sulfate can be considered completely free of risk from inflammatory mass[3]. The risk of inflammatory mass occurrence appears to be cumulative over time and increases with higher concentrations of opioids.

The following product information is an excerpt from the Infumorph® Drug Package Insert (Baxter) [4].

> *The recommended initial lumbar intrathecal dose range in patients with no tolerance to opioids is 0.2 to 1 mg/day. The published range of doses for individuals who have some degree of opioid tolerance varies from 1 to 10 mg/day. The upper daily dosage limit for each patient must be individualized.*
>
> *Doses above 20 mg/day should be employed with caution since they may be associated with a higher likelihood of serious side effects.*

Preclinical[5,6,7,8,9] and clinical[10,11,12,13,14,15,16] studies with intrathecal infusion have suggested that high doses and/or high concentrations of opioids increase the risk of inflammatory mass. Additionally, Medtronic data analysis indicates the risk of developing inflammatory mass in the next six months increases at least through the first thirty-six months of opioid therapy. Therefore, intrathecal opioids should be administered to achieve adequate analgesia for as long as possible at the lowest effective dose and concentration.

Figures 1-3 graphically show the estimated cumulative risk and survival from inflammatory mass by length of implant time and by the registered indication for the intrathecal infusion system. These figures were developed using data from Medtronic's voluntary post-market reporting system:

- Figure 1: By indication: chronic pain, spasticity, and both indications combined
- Figure 2: Chronic pain (with 95% confidence limits)
- Figure 3: Spasticity (with 95% confidence limits)

Note that the history of the actual drugs used in these infusion systems is not known, although for spasticity patients it is highly likely that baclofen was included [either Novartis Pharmaceuticals' Lioresal® Intrathecal (baclofen injection) or pharmacy-compounded baclofen].

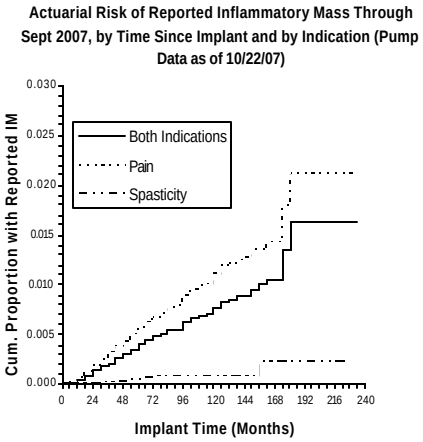


Figure 1

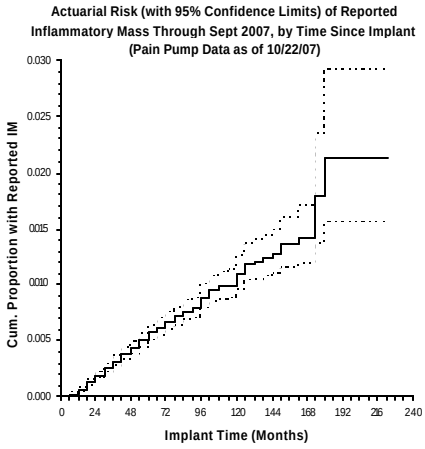
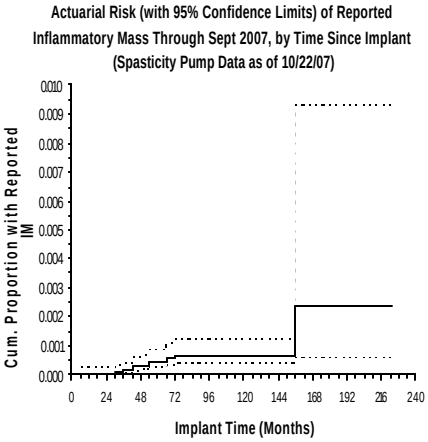


Figure 2



Note: Figure 3 Y-axis is scaled to 1/3 of Figures 1 and 2.

Figure 3

Information Regarding Intrathecal Baclofen Infusion

Medtronic has also reviewed its reports database and the medical literature to evaluate inflammatory mass in patients receiving intrathecal baclofen. There are cases of inflammatory mass reported with intrathecal baclofen as the sole agent.[17,18,19,20] The estimated risk of developing inflammatory mass is lower for patients treated for spasticity (presumably with intrathecal baclofen) than for patients treated for pain (see Figure 1). A common symptom associated with decreased baclofen therapy is the return of spasticity in patients. Physicians managing patients on ITB Therapy℠ (Intrathecal Baclofen Therapy) should use their medical judgment regarding the most appropriate monitoring specific to their patients' medical needs to identify prodromal clinical signs and symptoms for inflammatory mass, especially if using pharmacy-compounded drugs or baclofen admixtures that include opioids.

Recommendations for Patient Management

Individual patient susceptibility to inflammatory mass cannot be predicted. Diligent patient management and increased awareness of inflammatory mass symptoms may reduce the incidence of inflammatory mass or its sequelae. For pain therapy, the patient management recommendations for inflammatory mass as provided in the professional labeling (see Appendix A) have not changed.

In patients with new neurological signs or symptoms, consider neurosurgical consultation and the prompt performance of an imaging procedure (for example, MRI with and without contrast or CT myelogram) to confirm or rule-out the diagnosis of an inflammatory mass.

Medtronic is aware that pharmacy-compounded drugs and other pharmacological drug mixtures may be administered to patients through drug infusion systems. Medtronic strongly advises physicians to be familiar with the approved intrathecal indications for these devices; including preservative-free morphine sulfate sterile solution; Lioresal® Intrathecal (baclofen injection); and preservative-free ziconotide sterile solution. The effect of administering other drugs intrathecally through these devices has not been assessed.

Summary

In summary, healthcare professionals are encouraged to consider the following recommendations:

- When administering intrathecal opioids, the lowest effective dose and concentration should be administered.
- In patients treated with Intrathecal Baclofen Therapy, physicians should closely monitor their patients in order to identify the prodromal clinical signs and symptoms of inflammatory mass, especially if using pharmacy-compounded drugs or baclofen admixtures that include opioids.
- In patients with new neurological signs or symptoms, consider neurosurgical consultation and the prompt performance of an imaging procedure to confirm or rule-out the diagnosis of an inflammatory mass.

The US Food and Drug Administration (FDA) has knowledge of this communication being sent to Healthcare Professionals.

Please report any new and/or previously unreported inflammatory mass in a patient with a Medtronic device to Medtronic Neuromodulation Product Performance at 1-800-328-0810, and to the FDA's MedWatch Program by phone at 1-800-FDA-1088, by Fax at 1-800-FDA-0178, by mail at MedWatch, HF-2, FDA, 5600 Fishers Lane, Rockville, MD 20852-9787, or on the MedWatch web site at www.fda.gov/medwatch.

For Assistance

Contact Medtronic Neuromodulation Technical Services at 1-800-707-0933, Monday - Friday, 7:00 a.m. - 6:00 p.m. (Central Time), or your local Medtronic field representative. This information including links to the references or abstracts can be found on our web site at www.medtronicconnect.com.

Sincerely,

George Aram
Vice President Quality
Medtronic Neuromodulation

Enclosure: Appendix A - Excerpts from the Approved Medtronic Professional Labeling

Appendix A

Excerpts from the Approved Medtronic Professional Labeling

Warnings

Inflammatory mass at the catheter tip (symptoms) –
An inflammatory mass that can result in serious neurological impairment, including paralysis, could occur at the tip of the implanted catheter. Patients on intraspinal opioid therapy should be monitored carefully at each visit for any new neurological signs or symptoms.

Physicians should routinely monitor patients receiving **opioids** for the following prodromal clinical signs or symptoms of inflammatory mass:

- Change in the character, quality, or intensity of pain
- Reports of new radicular pain, especially at or near the dermatomal level of the catheter tip
- Frequent or large escalations of the daily drug dose are required to maintain the analgesic effect
- Dose escalations alleviate increasing pain only temporarily

To prevent possible permanent neurological injury, physicians should immediately evaluate patients who develop the following signs or symptoms:

- New or different sensory symptoms (eg, numbness, tingling, burning, hyperesthesia, hyperalgesia)
- New, occasional, or intermittent bowel or bladder sphincter dysfunction
- New motor weakness, change in gait, or difficulty walking
- Any neurological symptoms or signs that differ from baseline (eg, reflex changes)

Physicians should routinely monitor patients receiving **intrathecal baclofen** as a sole agent for the following prodromal clinical signs or symptoms of inflammatory mass:

- Change in the character, quality, or intensity of spasticity
- Frequent or large escalations of the daily drug dose are required to maintain the antispastic effect
- Rapid dose escalations alleviate the increasing spasticity only temporarily

Refer to “Adverse events summary” for more information on recognition, treatment, and mitigation of inflammatory mass.

Intraspinal therapy –
For intraspinal therapy, use ONLY a preservative-free sterile solution indicated for intraspinal use. Nonindicated fluids containing preservatives or endotoxins can be neurotoxic in intraspinal applications. Using nonindicated fluids can result in adverse events including, but not limited to, extreme pain, cramps, seizures, and death.

Adverse events summary

Drug-related complications

- Local or systemic drug toxicity and related side effects
- Inflammatory mass formation at the tip of the implanted catheter particularly in patients who receive intraspinal morphine or other opioid drugs

Recognition of inflammatory mass

For patients receiving intrathecal opioids, the following **prodromal**, or **warning** signs or symptoms may occur before the onset of more severe neurological impairment:

- Change in the character, quality, or intensity of pain
- New radicular pain, especially at or near the dermatomal level of the catheter tip
- Frequent or large escalations of the daily drug dose are required to maintain the analgesic effect
- Dose escalations alleviate the increasing pain only temporarily

For patients receiving intrathecal baclofen as a sole agent, the following **prodromal**, or **warning** signs or symptoms may occur before the onset of more severe neurological impairment[1]:

- Change in the character, quality, or intensity of spasticity
- Frequent or large escalations of the daily drug dose are required to maintain the antispastic effect
- Rapid dose escalations alleviate the increasing spasticity only temporarily

All patients on intraspinal opioid therapy should be monitored carefully at each visit for any new neurological signs or symptoms, including:

- New or different sensory symptoms (eg, numbness, tingling, burning, hyperesthesia, hyperalgesia)
- New, occasional, or intermittent bowel or bladder sphincter dysfunction
- New motor weakness, change in gait, or difficulty walking
- Any neurological symptom or sign that differs from baseline (eg, reflex changes)

In patients with new neurological signs or symptoms, consider neurosurgical consultation and the prompt performance of an imaging procedure (eg, MRI with and without contrast or CT myelogram) to confirm or rule-out the diagnosis of an inflammatory mass.

Treatment of inflammatory mass

Timely treatment may minimize, or help to avert permanent neurological injury.

If an inflammatory mass is detected early in its clinical course, a decrease or discontinuation of opioid delivery into the mass may cause it to shrink or disappear without the need for surgical removal.

Note: Refer to Emergency Procedures included in the technical manual packaged with the refill kit for information on emptying the pump. Stopping the pump for more than a few days can cause the rotor to stall permanently. If therapy is to be discontinued for an extended period of time, the pump should be filled with preservative-free saline and programmed to run at the minimum rate of 0.048 mL/day.

Depending upon an individual patient's clinical condition, intraspinal therapy may be continued after one of the following interventions:

- Withdraw the catheter to a level below the inflammatory mass.
- Remove the involved catheter and replace it with a new catheter positioned below the inflammatory mass.
- Disconnect the involved catheter from the connector (two-piece catheter), or transect the involved catheter above the level of the lumbo-dorsal fascia (one-piece catheter) leaving the intraspinal catheter segment undisturbed. Ligate the exposed end of involved catheter to prevent CSF loss. Implant a new catheter with its tip below the inflammatory mass, and connect the new catheter to the proximal (pump) catheter segment.

Prompt open surgical removal of the mass or decompression of the spinal canal should be considered in patients who have a significant or progressive neurological deficit.

Mitigation of inflammatory mass

Intraspinal therapy should be administered to achieve adequate clinical response for as long as possible at the lowest effective dose and concentration.

For the treatment of pain patients, whenever medically possible, the tip of the intraspinal catheter should be placed in the lumbar thecal sac, below the conus medullaris. Lumbar placement may lessen the neurological consequences if an inflammatory mass develops.

Patients who receive intraspinal opioid therapy should be monitored carefully at each visit for any new clinical and neurological signs or symptoms.

[1] Based on three case reports of patients from Murphy and Deer, respectively - Murphy PM, Skouvaklis DE, Amadeo RJJ et al. *Intrathecal Catheter Granuloma Associated with Isolated Baclofen Infusion,* Anesthesia Analgesia 2007; 102:848-852. Deer TR, Raso LJ, Garten TG. *Inflammatory Mass of an Intrathecal Catheter in Patients Receiving Baclofen as a Sole Agent: A Report of Two Cases and a Review of the Identification and Treatment of the Complication*. Pain Medicine 2007; 8(3):259-262.

[1] Medtronic January 2001 letter "Important Message Regarding the Occurrence of Inflammatory Masses at the Tip of Intraspinal Catheters," and Medtronic July 2003 Educational Brief "Information about Inflammatory Mass, Intrathecal Drug Infusion"
[2] Deer, TR. A prospective analysis of intrathecal granuloma in chronic pain patients: a review of the literature and report of a surveillance study. *Pain Physician.* 2004;7:225-228.
[3] Yaksh TL, Hassenbusch S, Burchiel K, Hildebrand KR, Page LM, Coffey RJ. Inflammatory masses associated with intrathecal drug infusion, a review of preclinical evidence and human data. *Pain Med* 2002;3:300-312.
[4] Product Information Infumorph Baxter Healthcare Corp. Deerfield Illinois October 2003.
[5] ibid endnote 3
[6] Yaksh TL, Horais KA, Tozier NA, et al. Chronically infused intrathecal morphine in dogs. *Anesthesiology*. 2003;99:174-187.
[7] Gradert TL, Baze WB, Satterfield WC, Hildebrand KR, Johansen MJ, Hassenbusch SJ. Safety of chronic intrathecal morphine infusion in a sheep model. *Anesthesiology*. 2003;99:188-198.
[8] Allen JW, Horais KA, Tozier NA, et al. Time course and role of morphine dose and concentration in intrathecal granuloma formation in dogs: a combined magnetic resonance imaging and histopathology investigation. *Anesthesiology*. 2006;105:581-589.
[9] Allen JW, Horais KA, Tozier NA, Yaksh TL. Opiate pharmacology of intrathecal granulomas. *Anesthesiology*. 2006;105:590-598.
[10] McMillan MR, Doud T, Nugent W. Catheter-associated masses in patients receiving intrathecal analgesic therapy. *Anesth Analg.* 2003,96:186-190.
[11] ibid endnote 2
[12] ibid endnote 3
[13] Hassenbusch S, Burchiel K, Coffey RJ, et al. Management of intrathecal catheter-tip inflammatory masses: a consensus statement. *Pain Med*. 2002;3:313-323.
[14] Coffey RJ, Burchiel K. Inflammatory mass lesions associated with intrathecal drug infusion catheters: report and observations on 41 patients. *Neurosurgery*. 2002;50:78-87.
[15] Cabbell, KL, Taren JA, Sagher O. Spinal cord compression by catheter granulomas in high-dose intrathecal morphine therapy: case report. *Neurosurgery.* 1998;42:1176-1181.
[16] Schuchard M, Lanning R, North R, et al. Neurologic sequelae of intraspinal drug delivery systems: Results of a survey of American implanters of implantable drug delivery systems. *Neuromodulation*. 1998;1:137-148.
[17] Murphy PM, Skouvaklis DE, Amadeo RJ, Haberman C, Brazier DH, Cousins MJ. Intrathecal catheter granuloma associated with isolated baclofen infusion. *Anesth Analg*. 2006; 102:848–852.
[18] Narouze SN, Mekhail NA. Intrathecal catheter granuloma with baclofen infusion. *Anesth Analg*. 2007; 104:209–210.
[19] Coffey RJ, Allen JW. Not all intrathecal catheter tip MRI findings are inflammatory mass. *Anesth Analg.* 2007; 104:1600–1602.
[20] Deer TR, Raso LJ, Garten TG. Inflammatory mass of an intrathecal catheter in patients receiving baclofen as a sole agent: a report of two cases and a review of the identification and treatment of the complication. *Pain Med* 2007; 8:259-262.

Exhibit 14

Class 1 Device Recall Medtronic SynchroMed II

Class 1 Device Recall Medtronic SynchroMed II

See Related Information[22]

Date Initiated by Firm	January 16, 2008
Date Posted	March 22, 2008
Recall Status[1]	Terminated [3] on June 06, 2011
Recall Number	Z-1150-2008
Recall Event ID	46685[23]
PMA Number	P860004[24] P990034[25]
Product Classification	Implanted programmable infusion pump[26] - **Product Code** LKK[27]
Product	Medtronic SynchroMed II Programmable Pump, model 8637-20. The contents of the inner package have been sterilized by ethylene oxide gas. 20 mL reservoir. Medtronic, Inc., 710 Medtronic Parkway NE, Minneapolis, MN 55432-5604, USA. The implantable Medtronic SynchroMed II Programmable Pump is part of the SynchroMed II Infusion System designed to contain and administer prescribed drugs to a specific site. The implantable components of the SynchroMed II Infusion System include the pump, catheter, and catheter accessories.
Code Information	all serial numbers
Recalling Firm/ Manufacturer	Medtronic Neuromodulation 800 53rd Ave NE

	PO Box 1250 Minneapolis MN 55440-1250
For Additional Information Contact	Technical Services 800-707-0933
Manufacturer Reason for Recall	Device/Drug Interaction - The company updated the labeling for the devices to include current patient management and treatment recommendations. The company received reports of inflammatory mass formations at or near the distal tip of intrathecal catheters which infuse opioids, baclofen, or chemotherapy drugs into patients. On January 16, 2008, Medtronic sent a letter to doctors who implant these d
FDA Determined Cause [2]	Device Design
Action	An Urgent Medial Device Correction letter was sent January 16, 2008, to Health Care Professionals. The letter describes the incidences, symptoms and recommendations for patient management. Excerpts from the approved Medtronic Professional Labeling are also included with the letter. The firm has requested unreported inflammatory mass in a patient with a Medtroinc device to the firm and to the FDA MedWatch Program by phone at 1-800-FDA-1088. Additional assistance may be obtained by contacting Medtronic Neuromodulation Technical Services at 1-800-707-0933.
Quantity in Commerce	~102,792 worldwide. 90,330 within US and 12,462 OUS
Distribution	Worldwide Distribution -- USA including states of Washington D.C., Puerto Rico, and countries of Aruba, Australia, Austria, Belarus, Belgium, Brazil, Canada, China, Croatia, Cyprus, Czech Republic, Denmark, Dominican Republic, Egypt, Faroe Islands, Finland, France, French Polynesia, Germany, Greece, Guadeloupe, Hong Kong, Hungary, Iceland, India, Iran, Iraq, Ireland, Israel, Italy, Japan, Jordan, Kuwait, Lebanon, Luxembourg, Malta, Mexico, Netherlands, Netherlands Antilles, New Caledonia, Norway, Pakistan, Poland, Portugal, Reunion, Romania, Russian Federation, San Marino, Saudi Arabia, Serbia and Montenegro, Singapore, Slovakia, Slovenia, South Africa, Spain, Sweden, Switzerland, Tunisia, Turkey, United Arab Emirates, United Kingdom, Vatican City State.
Total Product Life Cycle	TPLC Device Report[28]

[1] A record in this database is created when a firm initiates a correction or removal action. The record is updated if the FDA identifies a violation and classifies the action as a recall, and it is updated for a final time when the recall is terminated. Learn more about medical device recalls[29].

[2] Per FDA policy, recall cause determinations are subject to modification up to the point of termination of the recall.

[3] For details about termination of a recall see Code of Federal Regulations (CFR) Title 21 §7.55[30].

PMA Database PMAs with Product Code = LKK and Original Applicant = MEDTRONIC Inc.[31]

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22. http://www.fda.gov/safety/recalls/enforcementreports/default.htm
23. /scripts/cdrh/cfdocs/cfRES/res.cfm?start_search=1&event_id=46685
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28. /scripts/cdrh/cfdocs/cfTPLC/tplc.cfm?id=LKK
29. http://www.fda.gov/MedicalDevices/Safety/ListofRecalls/ucm329946.htm
30. /scripts/cdrh/cfdocs/cfCFR/CFRSearch.cfm?fr=7.55
31. /scripts/cdrh/cfdocs/cfPMA/pma.cfm?start_search=1&productcode=LKK&applicant=MEDTRONIC%20Inc%2E

Page Last Updated: 02/05/2020

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Exhibit 15

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MINNESOTA
Civil No. 15 - 2168

UNITED STATES OF AMERICA, Plaintiff v. MEDTRONIC INC., a corporation, and S. OMAR ISHRAK and THOMAS M. TEFFT, individuals, Defendants.	COMPLAINT FOR PERMANENT INJUNCTION

INTRODUCTION

Plaintiff, the United States of America, by its undersigned attorneys, respectfully represents to this Court as follows:

1. This statutory injunction proceeding is brought under the Federal Food, Drug, and Cosmetic Act (the "Act"), 21 U.S.C. § 332(a), to enjoin Medtronic Inc. (“Medtronic”), a corporation, and S. Omar Ishrak, and Thomas M. Tefft, individuals (hereinafter, collectively, “Defendants”) from violating:

A. 21 U.S.C. § 331(a), by introducing or delivering for introduction into interstate commerce, or causing the introduction or delivery for introduction into interstate commerce, articles of devices, as defined by 21 U.S.C. § 321(h), that are adulterated within the meaning of the Act, 21 U.S.C. § 351(h), in that the methods used in, or the facilities or controls used for, their manufacture, packing, storage, and

installation are not in conformity with current good manufacturing practice requirements prescribed at 21 C.F.R. Part 820;

B. 21 U.S.C. § 331(k), by causing devices to become adulterated within the meaning of 21 U.S.C. § 351(h), as described in paragraph A above, while such devices are held for sale after shipment in interstate commerce.

JURISDICTION AND VENUE

2. This Court has jurisdiction under 21 U.S.C. § 332(a) and 28 U.S.C. §§ 1331 and 1345.

3. Venue in this District is proper pursuant to 28 U.S.C. § 1391(b) and (c).

DEFENDANTS

4. Medtronic is incorporated under the laws of Minnesota. Medtronic Neuromodulation ("Medtronic Neuro"), a business unit of Medtronic, manufactures medical devices, including but not limited to, SynchroMed II implantable infusion pumps. The headquarters of Medtronic Neuro is located at 7000 Central Ave. NE, Minneapolis, MN 55432, and its manufacturing facility is located at 53rd Avenue, NE, Columbia Heights, MN 55421.

5. S. Omar Ishrak is Medtronic's Chairman and CEO. He is the most responsible person at the firm, and oversees the firm's product development, product management, and international relations and sales. He performs his duties at 710 Medtronic Parkway, Minneapolis, MN 55432.

6. Thomas M. Tefft is the Senior Vice President of Medtronic, and the President of Medtronic Neuro. He is the most responsible person at Medtronic Neuro,

and oversees the business unit's product development, research, regulatory compliance and marketing. He performs his duties at 7000 Central Ave. NE, Minneapolis, MN 55432.

7. Defendants have been, and are now, manufacturing and distributing in interstate commerce various articles of devices, as defined by 21 U.S.C. § 321(h), including, but not limited to, SynchroMed II implantable infusion pumps, the subject of this injunction.

8. Defendants' products are devices, within the meaning of 21 U.S.C. § 321(h), in that they are intended to affect the structure or any function of the body of man.

LEGAL STANDARDS

9. A device must be manufactured, packed, stored, and installed in conformity with good manufacturing practice to ensure its safety and effectiveness. 21 U.S.C. § 360j(f). The statutory good manufacturing practice requirement is set out in the quality system ("QS") regulation for devices, 21 C.F.R. Part 820. A device that has been manufactured, packed, stored, or installed in violation of this requirement is deemed to be adulterated. 21 U.S.C. § 351(h).

10. The introduction or delivery for introduction into interstate commerce of an adulterated article of device is a violation of the Act, 21 U.S.C. § 331(a).

11. The adulteration of a device while it is held for sale after shipment in interstate commerce constitutes a violation of the Act, 21 U.S.C. § 331(k).

APRIL 2013 INSPECTION

12. FDA inspected Medtronic Neuro's manufacturing facility on February 14 – April 3, 2013 ("April 2013 inspection"). During the April 2013 inspection, the FDA investigators documented numerous violations of the QS regulation at Medtronic Neuro. Many of these violations related directly to the manufacture of the SynchroMed II implantable infusion pump. FDA investigators observed the following violations of the QS regulation set forth in 21 C.F.R. Part 820:

A. Defendants fail to establish and maintain adequate design validation procedures to ensure that devices conform to defined user needs and intended uses, to complete proper risk analysis, and to document the results of the validation, in violation of 21 C.F.R. § 820.30(g);

B. Defendants fail to establish and maintain adequate procedures to include requirements for identifying the action(s) needed to correct and prevent recurrence of nonconforming product and other quality problems, in violation of 21 C.F.R. § 820.100(a)(3);

C. Defendants fail to establish and maintain adequate procedures to include requirements for verifying or validating the corrective and preventive action to ensure that such action is effective and does not adversely affect the finished device, in violation of 21 C.F.R. § 820.100(a)(4);

D. Defendants fail to establish and maintain procedures for implementing corrective and preventive action, in violation of 21 C.F.R. § 820.100(a);

E. Defendants fail to establish and maintain procedures for verifying the device design, in violation of 21 C.F.R. § 820.30(f);

F. Defendants fail to establish and maintain procedures for the identification, documentation, validation or where appropriate verification, review, and approval of design changes before their implementation, in violation of 21 C.F.R. § 820.30(i); and

G. Defendants fail to establish and maintain procedures to control product that does not conform to specified requirements, in violation of 21 C.F.R. § 820.90(a).

PRIOR INSPECTIONS

13. FDA inspected Medtronic Neuro's facilities previously in May 2012, January 2011, January 2007, and June 2006. At these inspections, FDA repeatedly observed and documented violations of the QS regulations similar to those cited above during the April 2013 inspection, including, but not limited to, violations involving: design controls (21 C.F.R. § 820.30) and corrective and preventive action (21 C.F.R. § 820.100).

14. At the conclusion of each of the prior inspections, the FDA investigators issued a Form FDA 483 detailing Defendants' numerous violations of the Act to Defendants, and discussed the documented observations with them. Defendants promised corrections at the conclusion of each inspection.

PRIOR NOTICE OF VIOLATIONS

15. Defendants are well aware that their practices violate the Act. FDA has repeatedly warned Defendants, both orally and in writing, about their violative conduct, and has emphasized the importance of Defendants' compliance with the Act.

16. FDA issued a Warning Letter dated July 17, 2012 to Defendants, following the May 2012 inspection of the Medtronic Neuro facility. The letter discussed the QS violations involving corrective and preventive actions and complaint handling (21 C.F.R. § 820.198) observed at the inspection. The letter also warned Defendants that further enforcement actions, including injunction, could occur if they did not correct the violations.

17. Defendants also received Warning Letters, dated July 3, 2007 and August 29, 2006, following the January 2007 and June 2006 inspections. These letters also addressed the numerous QS violations, including but not limited to design controls and corrective and preventive action, observed during the inspections and warned of further enforcement actions if corrections were not made.

18. Representatives of Medtronic also attended a meeting with FDA’s Center for Devices and Radiological Health and Minneapolis District Office on January 31, 2013. At this meeting, Defendants stated that they were aware of the violations at their facilities and were taking steps to correct them.

19. At the conclusion of each of FDA's inspections of the firm, the FDA investigators issued a Form FDA 483 detailing Defendants' various violations of the Act

to a responsible individual at the firm and discussed the documented observations with the recipient.

20. Defendants made promises to correct their violations in written responses to the April 2013 inspection, dated April 24, and several follow-up responses, detailing how and when the corrections promised in the April 24 letter had been made. None of these responses contained adequate evidence that Defendants have corrected their deviations.

21. Based on Defendants' conduct, Plaintiff believes that, unless restrained by order of this Court, Defendants will continue to violate 21 U.S.C. §§ 331(a) and (k).

WHEREFORE, Plaintiff prays:

I. That Defendants and each of their directors, officers, agents, representatives, employees, attorneys, successors, and assigns, and any and all persons in active concert or participation with any of them, be permanently restrained and enjoined pursuant to 21 U.S.C. § 332(a) from directly or indirectly:

A. violating 21 U.S.C. § 331(a), by introducing or delivering for introduction into interstate commerce, or causing the introduction or delivery for introduction into interstate commerce, any article of device that is adulterated within the meaning of 21 U.S.C. § 351(h); or

B. violating 21 U.S.C. § 331(k), by causing any article of device to become adulterated within the meaning of 21 U.S.C. § 351(h) while such devices are held for sale after shipment in interstate commerce.

II. That the Court order Defendants and each of their directors, officers, agents, representatives, employees, attorneys, successors, and assigns, and any and all persons in active concert or participation with any of them, to cease directly and indirectly manufacturing, packing, labeling, and distributing (domestically and internationally) SynchroMed II implantable infusion pumps at or from its Medtronic Neuro facilities, unless and until Defendants' methods, facilities, and controls used to manufacture, process, pack, label, hold, and distribute the SynchroMed II implantable infusion pumps are established, operated, and administered in compliance with 21 U.S.C. § 360j(f)(1) and the Quality System regulation prescribed in 21 C.F.R. Part 820, and in a manner that has been found acceptable to FDA; and

III. That the Court authorize FDA, pursuant to this injunction, to inspect Defendants' Medtronic Neuro facility to ensure continuing compliance with the terms of this injunction, with the costs of such inspections to be borne by Defendants at the rates prevailing at the time the inspections are performed.

IV. That Plaintiff be granted judgment for its costs herein, and that this Court grant such other and further relief as it deems just and proper.

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Exhibit 16

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MINNESOTA

UNITED STATES OF AMERICA, Plaintiff. v. MEDTRONIC, INC., a corporation, and S. OMAR ISHRAK and THOMAS M. TEFFT, individuals, Defendants.	Case No. _____ CONSENT DECREE OF PERMANENT INJUNCTION

Plaintiff, the United States of America, by its undersigned attorneys, having filed a complaint for permanent injunction against Medtronic, Inc. ("Medtronic"), a corporation, and S. Omar Ishrak and Thomas M. Tefft, individuals (collectively, "Defendants"), and Defendants, having appeared and having consented to entry of this Decree without contest, without admitting or denying the allegations in the Complaint, and disclaiming any liability in connection therewith and before any testimony has been taken, and the United States having consented to this Decree,

IT IS HEREBY ORDERED, ADJUDGED, AND DECREED AS FOLLOWS:

1. This Court has jurisdiction over the subject matter of this action and has personal jurisdiction over all parties to this action.

2. The Complaint for Permanent Injunction states a cause of action against Defendants under the Federal Food, Drug, and Cosmetic Act (the "Act"), 21 U.S.C. § 301 *et. seq.*

3. The Complaint alleges that Defendants violate the Act, 21 U.S.C. § 331(a), by introducing or delivering for introduction into interstate commerce, or causing the introduction or delivery for introduction into interstate commerce, articles of device, as defined by 21 U.S.C. § 321(h), namely SynchroMed Implantable Infusion Pump Systems, that are adulterated within the meaning of 21 U.S.C. § 351(h), in that the methods used in, or the facilities or controls used for, their manufacture, packing, and storage are not in conformity with current good manufacturing practice requirements prescribed at 21 C.F.R. Part 820.

4. The Complaint also alleges that Defendants violate the Act, 21 U.S.C. § 331(k), by causing the SynchroMed Implantable Infusion Pump systems to become adulterated within the meaning of 21 U.S.C. § 351(h) while such devices are held for sale after shipment in interstate commerce.

DEFINITIONS

5. For the purposes of this Decree, the following definitions apply:

A. "SynchroMed device" shall mean all implantable infusion pumps and their accessories that are designed, manufactured, processed, packed, labeled, held, stored, installed, and distributed at or from any Medtronic Neuromodulation facility.

B. "Medtronic Neuromodulation" shall mean the Medtronic Neuromodulation Business Unit of Medtronic, Inc., which is responsible for designing,

manufacturing, processing, packing, labeling, holding, storing, and distributing, among other devices, the SynchroMed devices.

C. "Medtronic Neuromodulation facilities" shall mean Medtronic Neuromodulation's headquarters, located at 7000 Central Ave. NE, Minneapolis, MN, and the manufacturing facility located at 53rd Avenue NE, Columbia Heights, MN.

D. A SynchroMed device is "medically necessary" if (i) it is used to treat one or more of the following conditions for which the benefits of using the SynchroMed device outweigh the risks: (a) severe spasticity; (b) chronic intractable pain; (c) severe chronic pain; and/or (d) primary or metastatic cancer; and (ii) the physician, after reviewing the notification letter attached hereto as Exhibit A, signs a form approved by FDA, attached hereto as Exhibit B, certifying that s/he is aware of FDA's findings and deems the SynchroMed device necessary to treat his/her patient under the conditions referred to in this paragraph (hereafter, "Certificate of Medical Necessity").

E. Days shall refer to calendar days unless otherwise stated.

INJUNCTIVE PROVISIONS

6. Upon entry of this Decree, except as described in paragraph 9, Defendants, and each and all of their directors, officers, agents, representatives, employees, attorneys, successors, and assigns, and any and all persons in active concert or participation with any of them (including franchisees, affiliates, and "doing business as" entities) who have received actual notice of the contents of this Decree by personal service or otherwise are permanently restrained and enjoined, pursuant to 21 U.S.C. § 332(a), from directly or indirectly designing, manufacturing, processing, packing, labeling, holding, storing, and distributing, importing into or exporting from the United States of America, at or from any

Medtronic Neuromodulation facilities, any model of, or components or accessories for, its SynchroMed devices, unless and until:

A. Defendants' methods, facilities, and controls used to design, manufacture, process, pack, label, hold, store, and distribute SynchroMed devices are established, operated, and administered in compliance with 21 U.S.C. § 360j(f)(1) and the Quality System ("QS") regulation set forth in 21 C.F.R. Part 820.

B. Defendants select and retain at Medtronic's expense, within thirty (30) days of the entry of this Decree, an independent person or persons (the "Expert"), to conduct inspections of Defendants' operations and to review Defendants' procedures and methods for designing, manufacturing, processing, packing, labeling, holding, storing, and distributing SynchroMed devices, to determine whether their methods, facilities, and controls are operated and administered in conformity with the Act, its implementing regulations, and this Decree. The Expert shall be qualified by education, training, and experience to conduct such inspections, and shall be without personal or financial ties (other than a consulting agreement between the Expert and Medtronic or Medtronic Neuromodulation) to Defendants' officers or employees or their immediate families. Defendants shall notify FDA in writing of the identity of the Expert within ten (10) days of retaining such Expert.

C. The Expert shall perform comprehensive inspections of Medtronic Neuromodulation facilities that design, manufacture, process, pack, label, hold, store, or distribute the SynchroMed devices or any component thereof and certify in writing simultaneously to Defendants and FDA: (i) that he or she has inspected Defendants' facilities, processes, and controls; (ii) whether Defendants have corrected all findings and

violations set forth in FDA's Inspectional Observations ("Forms FDA 483") and Warning Letters issued to Medtronic Neuromodulation facilities from all FDA inspections since January 2011; and (iii) based upon these comprehensive inspections, whether Defendants' operations are operated in conformity with the Act, its implementing regulations, and this Decree. The Expert's certification report shall encompass, but not be limited to, an evaluation of the following as they relate to SynchroMed devices:

(i) Defendants' compliance with 21 U.S.C. § 351(h) and 21 C.F.R. Part 820;

(ii) Defendants' procedures for their Corrective and Preventive Action ("CAPA") system, including, but not limited to, analyzing quality data to identify, correct, and prevent existing and potential causes of nonconforming product and other quality problems;

(iii) Defendants' procedures for their design control system, including, but not limited to, establishing and implementing adequate design and development plans, inputs, outputs, design reviews, verification, validation, risk analyses, design change controls, and a design history file for each type of device;

(iv) Defendants' procedures for their nonconforming product, including, but not limited to, the identification, documentation, evaluation, segregation, and disposition, including rework, of nonconforming product; and

(v) Defendants' design verification and design validation documents for the SynchroMed device to ensure that the approved product specifications are being met. In circumstances where the Defendants have identified a design defect that causes the SynchroMed device to not perform according to the approved product

specifications, the Expert shall review the design defect analysis documentation. The design defect analysis documentation should include a description of the design defect, the potential risk to patients associated with the defect, a timeline of actions taken during the defect investigation, proposed corrective actions, design changes being considered, developed, and /or tested, and actions that have been taken or will be taken to potentially correct the design defect. The Expert shall also review design changes made to the SynchroMed device in the previous five (5) years to verify that the changes previously implemented are effective and do not adversely affect the device.

D. Within forty-five (45) days of receiving the Expert's inspection report under paragraph 6.C, Defendants shall submit a written report ("work plan") to FDA detailing the specific actions Defendants have taken and/or will take to address the Expert's observations and to bring the methods, facilities, processes, and controls used to design, manufacture, process, pack, label, hold, store, and distribute the SynchroMed device into compliance with the requirements of this Decree, the Act, and the QS regulation. The specific actions in the work plan shall be set forth in numbered steps and, where appropriate, the numbered steps may include subordinate lettered steps. The work plan shall include a timetable with a specific date for completing each numbered step and may include, where appropriate, interim dates for completing subordinate lettered steps. The work plan, including its proposed specific actions and timetable, shall be subject to FDA approval, and Defendants shall ensure the implementation of the numbered steps in the work plan in accordance with the timetable approved by FDA. FDA shall approve or disapprove in writing the proposed work plan within sixty (60) days.

E. Defendants may begin implementing the work plan as soon as they receive written FDA approval. Under no circumstances may FDA's silence be construed as approval. As the actions detailed in the work plan are completed, Defendants shall notify the Expert in writing, who shall promptly inspect and verify whether those actions have been completed in a manner that complies with the requirements of this Decree, the Act, and the QS regulation to the Expert's satisfaction and in accordance with the work plan timetable.

F. If the Expert determines that an action has not been completed to his or her satisfaction, the Expert shall promptly notify Defendants in writing. Beginning thirty (30) days after implementation of the work plan, and quarterly thereafter, the Expert shall submit to FDA a table that summarizes the Expert's findings regarding whether the actions have been completed to the Expert's satisfaction and in accordance with the numbered steps in the work plan timetable. FDA may, at its discretion and without prior notice, periodically inspect Medtronic Neuromodulation facilities and undertake such additional examinations, reviews, and analyses as FDA deems appropriate to verify whether the actions reported to the Expert as completed have in fact been adequately completed on time. In the event that FDA determines that an action that has been reported to be completed is inadequate, FDA shall notify Defendants in writing, and Defendants shall take appropriate action in accordance with a timetable approved by FDA.

G. When the Expert determines that all of the actions identified in the work plan have been completed to his or her satisfaction, the Expert shall provide Defendants and FDA with a written certification that all of the actions have been completed and that, based on the inspections conducted under paragraph 6.C and on the

satisfactory completion of the actions in the work plan identified under paragraph 6.D, Defendants' methods, facilities, processes, and controls used to design, manufacture, process, pack, label, hold, store, and distribute the SynchroMed devices, are and, if properly maintained and implemented by Defendants, will continuously remain in conformity with the requirements of this Decree, the Act, and the QS regulation. The Expert's certification shall include a full and complete detailed report of the results of his or her inspection.

H. Within thirty (30) business days of FDA's receiving the Expert's certification under paragraph 6.G, duly authorized FDA representatives may inspect, as FDA deems necessary and without prior notice, the Medtronic Neuromodulation facilities, including buildings, equipment, personnel, finished and unfinished materials, containers, and labeling, and all records relating to the methods used in, and the facilities and controls used for, the manufacture, design, processing, packing, labeling, holding, storage, and distribution of SynchroMed devices, to determine whether the requirements of paragraphs 6.A-G of this Decree have been met, and whether Defendants are otherwise operating in conformity with this Decree, the Act, and the QS regulation.

I. If FDA determines that Defendants are not operating in conformity with the requirements of this Decree, the Act, and the QS regulation with regard to the SynchroMed devices, FDA will notify Defendants of the deficiencies it observed and will take any other action FDA deems appropriate (*e.g.*, issuing an order pursuant to paragraph 11). Within thirty (30) days of receiving this notification from FDA, Defendants shall submit to FDA a plan describing the actions Defendants propose to take and a timetable for correcting the deficiencies. The timetable and plan shall be subject to FDA approval. Defendants shall promptly correct all deficiencies noted by FDA in accordance with the

FDA approved timetable and plan, and shall cause the Expert to reinspect the conditions relevant to the deficiencies noted by FDA and either:

(i) certify that the deficiencies have been corrected to ensure that Defendants' methods, facilities, processes, and controls used for manufacturing, processing, packing, labeling, holding, storing, and distributing the SynchroMed devices are in conformity with the requirements of this Decree, the Act, and the QS regulation; or

(ii) notify Defendants and FDA in writing that one or more deficiencies remain uncorrected. If one or more deficiencies have not been corrected, Defendants shall correct the deficiencies to the Expert's satisfaction, at which point the Expert shall issue the certification simultaneously to Defendants and FDA. Within forty-five (45) business days after FDA receives the certification, FDA may reinspect as it deems necessary, without prior notice.

J. FDA notifies Defendants in writing that Defendants appear to be in compliance with the requirements set forth in paragraphs 6.A-I. Such notice shall not be dependent upon Defendants' completion of the SynchroMed Pump Remediation Plan described in paragraph 7.

7. No later than twenty (20) days after entry of this Decree, Defendants shall submit to FDA in writing a Pump Remediation Plan to ensure that the SynchroMed devices currently produced in the United States are in compliance with the Act, its implementing regulations, and this Decree ("SynchroMed PRP").

A. The SynchroMed PRP shall include, among other things:

(i) the identification of the root causes or, if not precisely known, the probable root causes, of failures in the SynchroMed devices Defendants are proposing to correct;

(ii) a description of and the supporting documentation for upgrades, modifications, and/or actions necessary to correct the identified failures;

(iii) the testing conducted or to be conducted to verify and validate such upgrades and/or modifications;

(iv) the projected dates on which Defendants will implement and complete the SynchroMed PRP;

(v) the manner in which the upgrades and/or modifications will be made to the SynchroMed devices; and

(vi) a clear statement whether Defendants believe that premarket approval by FDA is required for the proposed upgrades and/or modifications to the SynchroMed devices proposed in the SynchroMed PRP, and the reason for that belief.

B. Defendants shall not initiate the SynchroMed PRP until FDA has first provided Defendants with written acknowledgement to proceed with all or a portion of the SynchroMed PRP. FDA shall respond in writing within thirty (30) days of FDA's receipt of Defendants' SynchroMed PRP and notify Defendants in writing whether the proposed plan is acceptable. If FDA finds some or all of the SynchroMed PRP unacceptable, it shall state in writing the basis for finding specific portions of the proposed SynchroMed PRP unacceptable, and Defendants shall submit a revised SynchroMed PRP in writing within twenty (20) days of receipt of FDA's response. FDA shall respond in writing within twenty (20) days of FDA's receipt of Defendants' revised SynchroMed PRP and notify Defendants

in writing whether the revised plan is acceptable; and, if specific portions of the revised plan are unacceptable, FDA shall state the basis in its written response.

C. Defendants shall commence those portions of the initial and/or revised SynchroMed PRP that were found acceptable by FDA within thirty (30) days of receiving FDA's written authorization of the initial and/or revised SynchroMed PRP. Defendants shall, beginning one month after the date on which implementation of the SynchroMed PRP, in whole or in part, has begun, and continuing until its completion, submit to FDA quarterly written progress reports that describe the status of the SynchroMed PRP. If Defendants have not obtained FDA's authorization for the SynchroMed PRP within six (6) months after the date this Decree is entered, FDA may take any action(s) it deems appropriate to the extent permitted under paragraph 11 of this Decree.

D. PRP documentation, described above in paragraph 7.A, shall be available for Expert and FDA review in accordance with paragraph 6.

8. Upon entry of this Decree, except as permitted in paragraph 9, Defendants and each and all of their directors, officers, agents, representatives, employees, attorneys, successors, and assigns, and any and all persons in active concert or participation with any of them (including franchisees, affiliates, and "doing business as" entities), who have received actual notice of this Decree by personal service or otherwise, are permanently enjoined under the provisions of 21 U.S.C. § 332(a) from directly or indirectly doing or causing to be done any act that:

A. Violates 21 U.S.C. § 331(a), by introducing or delivering for introduction into interstate commerce, or causing the introduction or delivery for introduction into interstate commerce of, SynchroMed devices, or any other Medtronic

devices of a similar design or for a similar use, as defined by 21 U.S.C. § 321(h), that are adulterated within the meaning of 21 U.S.C. § 351(h).

B. Violates 21 U.S.C. § 331(k), by causing the SynchroMed devices, or any other Medtronic devices of a similar design or for a similar use, to become adulterated within the meaning of 21 U.S.C. § 351(h), while such devices are held for sale after shipment in interstate commerce.

EXCLUSIONS

9. Paragraphs 6 and 8 of this Decree shall not apply to the following:

A. Manufacturing, processing, packing, labeling, holding, storing, and distributing SynchroMed devices that are intended for use in medically necessary cases, as defined in paragraph 5.D. Medtronic may provide a medically necessary SynchroMed device only if the following requirements have been and continue to be, or will be, met: (i) the patient's physician has completed the Certificate of Medical Necessity (CMN), referenced in paragraph 5.D and attached hereto as Exhibit B; (ii) Medtronic promptly provides FDA with copies of all CMNs for the first three (3) months following entry of this Decree; (iii) Medtronic maintains and promptly provides to FDA upon request copies of any additional CMNs executed after the first three (3) months; and (iv) Medtronic provides reports of granted CMNs to FDA every three (3) months for a period of one (1) year and not less than every six (6) months for a period of four (4) years thereafter. In circumstances where the SynchroMed pump is required for use in an emergency case and it is impractical or there is insufficient time to obtain a CMN in advance of the procedure, Medtronic may provide the SynchroMed device for such use so long as the patient's physician (i) completes the CMN following the procedure, and (ii) submits the completed CMN to Medtronic as

soon as possible following the procedure. The parties agree that such situations will be infrequent. In those cases in which prior approval is not feasible, Medtronic will supply FDA with a copy of completed CMN within three (3) business days of receiving the CMN from the physician.

B. Manufacturing, processing, packing, labeling, holding, storing, and distributing SynchroMed devices intended for patients seeking a replacement SynchroMed device. Medtronic shall provide a replacement SynchroMed device to a patient only if the following requirements have been and continue to be, or will be, met: (i) the patient's physician has completed the Replacement Pump Certificate ("RPC"), attached hereto as Exhibit C; (ii) Medtronic promptly provides FDA with copies of all RPCs for the first three months following entry of this Decree; (iii) Medtronic maintains and promptly provides to FDA upon request copies of any RPCs executed after the first three (3) months; and (iv) Medtronic provides reports of granted RPCs to FDA every three (3) months for a period of one (1) year and not less than every six (6) months for a period of four (4) years thereafter. In circumstances where a replacement SynchroMed pump is needed for use in an emergency case and it is impractical or there is insufficient time to obtain an RPC in advance of the procedure, the Defendants may distribute the replacement SynchroMed device for such use, provided that the patient's physician (i) completes the RPC following the procedure, and (ii) submits the completed RPC to Medtronic as soon as possible following the procedure. The parties agree that such situations will be infrequent. In each case in which prior approval is not feasible, Medtronic will supply FDA with a copy of the completed RPC within three (3) business days of receiving the RPC from the physician.

C. Manufacturing, processing, packing, labeling, holding, storing, and distributing any component, part, raw material, accessory, refill kit, or sub-assembly, solely for the purpose of providing service or repair to a SynchroMed device implanted prior to the date of the entry of this Decree, or that was provided pursuant to paragraph 9.A, 9.B, or 9.I of this Decree. Medtronic may provide replacement components, parts, raw materials, accessories, refill kits, and sub-assemblies to patients, their physicians, healthcare providers, and facilities for service or repair of SynchroMed devices and components only if the following requirements have been met: (i) Medtronic sends a copy of the notification letter attached hereto as Exhibit A to the physicians, healthcare providers, or facilities to whom Medtronic provides such items; and (ii) Medtronic maintains records, and allows FDA access to such records upon request, of all service and repair components, parts, raw materials, accessories, refill kits and sub-assemblies provided under this paragraph, including copies of the notification letters sent to physicians, healthcare providers, and facilities.

D. Manufacturing, processing, packing, labeling, holding, storing, and distributing limited quantities of SynchroMed devices that are not intended for human use and are intended for use in development, testing, verification, validation, or qualification activities necessary to complete (i) design changes in support of the SynchroMed PRP, (ii) changes to production and process controls, (iii) changes to manufacturing procedures, (iv) corrective and preventive actions, and/or (v) changes to components, parts, or suppliers.

E. Testing, verifying, or validating design changes of SynchroMed devices, including any component or accessory, and subsequently manufacturing and

distributing the SynchroMed devices, components, or accessories, for the sole purpose of implementing a correction or removal as defined in 21 C.F.R § 806.

F. Design work related to remediation of existing safety issues with the SynchroMed devices, or related to safety issues with the SynchroMed devices discovered during the implementation of this Decree.

G. Manufacturing, processing, packing, labeling, holding, storing, and distributing SynchroMed devices for development activities and distributing such devices for demonstration and research purposes only, such as use in product demonstrations and research in laboratories, including preclinical animal research, provided that the devices are labeled "NOT FOR HUMAN USE."

H. Manufacturing, processing, packing, labeling, holding, storing, and distributing SynchroMed devices solely for the purpose of permitting clinical trials to be conducted in accordance with 21 C.F.R. Part 312 or 812, or for international clinical trials conducted in accordance with Good Clinical Practices, provided that Defendants comply with all applicable laws and regulations relating to the manufacture and distribution of investigational devices.

I. Manufacturing, processing, packing, labeling, holding, storing, and distributing SynchroMed devices that were ordered or provided for cases that were scheduled prior to entry of this Decree.

J. Importing components and accessories necessary to manufacture and distribute SynchroMed devices, parts, components, and accessories as permitted by paragraphs 9.A–I of this Decree.

ADDITIONAL REQUIREMENTS

10. After Defendants have complied with paragraphs 6.A-I and FDA has notified Defendants in writing pursuant to paragraph 6.J, Defendants shall retain an independent person or persons (the "Auditor") at Medtronic's expense to conduct audit inspections of Defendants' operations not less than once every six (6) months for a period of one (1) year and not less than once every twelve (12) months for a period of two (2) years thereafter. The Auditor shall be qualified by education, training, and experience to conduct such inspections, and shall be without personal or financial ties (other than a consulting agreement entered into by the Auditor and Medtronic or Medtronic Neuromodulation) to Defendants' officers or employees or their immediate families. The Auditor may be the same person or persons described as the Expert in paragraph 6.

A. At the conclusion of each audit inspection, the Auditor shall prepare a written audit report (the "Audit Report") analyzing whether Medtronic Neuromodulation is operated and administered in compliance with the Act, its implementing regulations, and this Decree, and identifying in detail any deviations from the foregoing ("Audit Report Findings"). As part of every Audit Report, except the first, the Auditor shall assess the adequacy of corrective actions taken by Defendants to correct all previous Audit Report Findings. The Audit Reports shall be delivered contemporaneously to Defendants and FDA by courier service or overnight delivery service, no later than twenty (20) days after the date each audit inspection is completed. If any Audit Report(s) identify any deviations from the Act, its implementing regulations, and/or this Decree, FDA may, in its discretion, require that the two (2) year auditing cycle be extended or begin anew. In addition, Defendants shall maintain complete Audit Reports and all of their underlying data in

separate files at their facilities and shall promptly make the Audit Reports and underlying data available to FDA upon request.

B. If an Audit Report contains any adverse Audit Report Findings, Defendants shall, within forty-five (45) days of receipt of the Audit Report, correct those Findings, unless FDA notifies Defendants that a shorter time period is necessary. If, after receiving the Audit Report, Defendants believe that correction of any adverse Audit Report Finding will take longer than forty-five (45) days, Defendants shall, within fifteen (15) days of receipt of the Audit Report, propose a schedule for completing corrections ("Correction Schedule") and provide justification for the additional time. Defendants shall complete all corrections according to the Correction Schedule. Within forty-five (45) days of Defendants' receipt of an Audit Report, or within the time period provided in a Correction Schedule, the Auditor shall review the actions taken by Defendants to correct the adverse Audit Report Finding(s). Within ten business days of the completion of that review, the Auditor shall report in writing to FDA whether each of the adverse Audit Report Findings has been corrected and, if not, which adverse Audit Report Findings remain uncorrected.

11. If, at any time after this Decree has been entered, FDA determines, based on the results of an inspection; the analysis of samples; a report or data prepared or submitted by Defendants, the Expert, or the Auditor pursuant to this Decree; or any other information, that Defendants have failed to comply with any provision of this Decree, or have violated the Act or its implementing regulations, or that additional corrective actions are necessary to achieve compliance with this Decree, the Act, or its implementing regulations, FDA may, as and when it deems necessary, order Defendants in writing to take appropriate actions with

respect to SynchroMed devices. Such actions may include, but are not limited to, the following:

i. Cease designing, manufacturing, processing, packing, labeling, holding, storing, distributing, importing and/or exporting SynchroMed devices produced at the Medtronic Neuromodulation facilities;

ii. Revise, modify, or expand any report(s) prepared pursuant to the Decree;

iii. Submit additional notifications, reports, or any other materials or information to FDA with respect to SynchroMed devices;

iv. Recall and/or provide refunds for, at Medtronic's sole expense, adulterated or misbranded devices or components manufactured, distributed, and/or sold by Defendants or that are under the custody and control of Defendants' agents, distributors, customers, or consumers;

v. Issue a safety alert, public health advisory and/or press release with respect to the SynchroMed devices; and/or

vi. Take any other corrective action(s) with respect to the SynchroMed devices as FDA, in its discretion, deems necessary to protect the public health or to bring Defendants into compliance with the Act, its implementing regulations, and this Decree.

12. The following process and procedures shall apply in the event that FDA issues an order under paragraph 11:

A. Unless a different timeframe is specified by FDA in its order, within ten (10) business days after receiving such order, Defendants shall notify FDA in writing

either that: (i) Defendants are undertaking or have undertaken corrective action, in which event Defendants shall also describe the specific action taken or proposed to be taken and the proposed schedule for completing the action; or (ii) Defendants do not agree with FDA's order. If Defendants notify FDA that they do not agree with FDA's order, Defendants shall explain in writing the basis for their disagreement; in so doing, Defendants may also propose specific alternative actions and timeframes for achieving FDA's objectives.

B. If Defendants notify FDA that they do not agree with FDA's order, FDA will review Defendants' notification, and thereafter, in writing, affirm, modify, or withdraw its order, as FDA deems appropriate. If FDA affirms or modifies its order, it shall explain the basis for its decision in writing. The written notice of affirmation or modification shall constitute final agency action.

C. If FDA affirms or modifies its order, Defendants shall, upon receipt of FDA's order, immediately implement the order (as modified, if applicable), and may, if they so choose, bring the matter before this Court on an expedited basis. While seeking Court review, Defendants shall continue to diligently implement FDA's order, unless the Court stays, sets aside, or modifies FDA's order. Judicial review of FDA's order shall be made pursuant to paragraph 24.

D. The process and procedures set forth in paragraphs 12.A–C shall not apply to any order issued pursuant to paragraph 11 if such order states that, in FDA's judgment, the order raises a significant public health concern. In such case, Defendants shall, upon receipt of such order, immediately and fully comply with the terms of the order. Should Defendants seek to challenge any such order, they may petition this Court for relief

while they implement FDA's order. Judicial review of FDA's decision under this paragraph shall be made pursuant to paragraph 24.

13. Any cessation of operations or other action as described in paragraph 11 shall continue until Defendants: (a) receive written notification from FDA that Medtronic Neuromodulation appears to be in compliance with this Decree, the Act, and its implementing regulations or (b) receive written authorization from the Court. After a cessation of operations, and while determining whether Defendants are in compliance with this Decree, the Act, and its implementing regulations, FDA may require Defendants to re-institute or re-implement any of the requirements of this Decree. Defendant Medtronic shall pay the costs of FDA supervision, inspections, investigations, analyses, examinations, reviews, sampling, testing, travel time, and subsistence expenses to implement the remedies set forth in paragraph 11, at the rates specified in paragraph 15.

14. Representatives of FDA shall be permitted, without prior notice and as and when FDA deems necessary, to make inspections of Defendants' operations at the Medtronic Neuromodulation facilities and, without prior notice, take any other measures necessary to monitor and to ensure continuing compliance with the terms of this Decree. During such inspections, FDA representatives shall be permitted: access to buildings, equipment, in-process and finished materials, containers, and labeling therein; to take photographs and make video recordings; to take samples of Defendants' materials and products, containers, and labeling; and to examine and copy all records relating to the receipt, manufacture, processing, packing, labeling, holding, and distribution of the SynchroMed devices and the design of the SynchroMed devices. FDA will provide Defendants with a receipt for any samples taken pursuant to 21 U.S.C. § 374 and with copies

of any photographs or video recordings, upon the receipt of a written request by Defendants, and at Medtronic's expense. The inspections shall be permitted upon presenting a copy of this Decree and appropriate credentials. The inspection authority granted by this Decree is separate from, and in addition to, the authority to make inspections under the Act, 21 U.S.C. § 374.

15. Defendant Medtronic shall reimburse FDA for the costs of all FDA inspections, investigations, supervision, reviews, examinations, and analyses that FDA deems necessary to evaluate Defendants' compliance with this Decree. The costs of such inspections shall be borne by Medtronic at the prevailing rates in effect at the time the costs are incurred. As of the date that this Decree is signed by the parties, these rates are: $88.45 per hour and fraction thereof per representative for inspection work; $106.03 per hour or fraction thereof per representative for analytical or review work; $0.56 per mile for travel expenses by automobile; government rate or the equivalent for travel by air or other means; and the published government per diem rate or the equivalent for the areas in which the inspections are performed per-day, per-representative for subsistence expenses. FDA shall submit a bill of costs to Defendant Medtronic. In the event that the standard rates applicable to FDA supervision of court-ordered compliance are modified, these rates shall be increased or decreased in accordance with the modified rates without further order of the Court.

16. Within five (5) business days of the entry of this Decree, Defendants shall post a copy of this Decree in the employee common areas at the Medtronic Neuromodulation facilities and on Medtronic's intranet website in such a manner as to ensure that it will be viewed by employees at the Medtronic Neuromodulation facilities.

Defendants shall ensure that the Decree remains posted in its employee common areas and on its intranet website for as long as the Decree remains in effect.

17. Within ten (10) days after the entry of this Decree, Defendants shall provide a copy of this Decree, by personal service, electronic mail, or certified mail (restricted delivery, return receipt requested), to each and all of its directors, officers, agents, representatives, employees, attorneys, successors, and assigns, and any and all persons in active concert or participation with any of them (including franchisees, affiliates, and "doing business as" entities), with responsibility for the design, manufacture and/or distribution of the SynchroMed devices at or from the Medtronic Neuromodulation facilities (hereinafter, collectively referred to as "Associated Persons"). For international Associated Persons, Medtronic Neuromodulation shall provide a copy of the Decree by personal service, electronic mail, or certified mail (restricted delivery, return receipt requested) within twenty-five (25) days after the entry of this Decree. Within thirty (30) days after the entry of this Decree, Medtronic shall provide to FDA an affidavit stating the fact and manner of compliance with this paragraph, identifying the names, addresses, and positions of all persons or entities who have been provided a copy of this Decree pursuant to this paragraph and attaching documentation of the manner in which copies of the Decree were provided.

18. In the event that Medtronic Neuromodulation becomes associated, at any time after the entry of this Decree, with any new Associated Person, Medtronic shall within fifteen business days of the commencement of such association: (a) provide a copy of this Decree to each such Associated Person by personal service, electronic mail, or certified mail (restricted delivery, return receipt requested); and (b) on a quarterly basis, notify FDA in writing, in accordance with paragraph 20, when, how, and to whom the Decree was provided.

Defendants shall provide to FDA an affidavit stating the fact and manner of compliance with this paragraph, identifying the names, addresses, and positions of all persons or entities that have been provided a copy of this Decree pursuant to this paragraph, and documentation of the manner in which copies of the Decree were provided.

19. Defendant Medtronic shall notify the District Director, FDA Minneapolis District Office, in writing at least fifteen (15) days before: (i) any change in ownership, character, or name of the Medtronic Neuromodulation business, such as dissolution, assignment, or sale resulting in the emergence of a successor corporation that, in each case, may affect compliance with this Decree; (ii) the creation or dissolution of subsidiaries, franchisees, affiliates, or "doing business as" entities, or any other change in the corporate structure of Medtronic Neuromodulation or in the sale or assignment of any business assets, such as buildings, equipment, or inventory, that, in each case, may affect compliance with this Decree. Medtronic shall provide a copy of this Decree to any potential successor or assignee at least fifteen (15) days before any sale or assignment. Medtronic shall furnish FDA with an affidavit of compliance with this paragraph no later than ten (10) days prior to such assignment or change in ownership.

20. All notifications, correspondence, and communications required to be sent to FDA by the terms of this Decree shall be addressed to the District Director, Minneapolis District Office, 250 Marquette Ave., Suite 600, Minneapolis, MN 55401. All notifications, correspondence, and communications required to be sent to Defendants by the terms of this Decree shall be addressed to Director of Consent Decree Compliance Task Force, Medtronic Neuromodulation, 7000 Central Avenue NE, Minneapolis, MN 55432.

FINANCIAL PROVISIONS

21. In the event that Defendants fail, as determined by FDA, to comply with any time frame or provision of this Decree, then FDA shall have the sole and unreviewable discretion to order Medtronic to pay the United States Treasury as liquidated damages the sum of fifteen thousand dollars ($15,000.00) per violation of this Decree and an additional sum of fifteen thousand dollars ($15,000.00) for each day such violation continues.

22. In the event Defendants fail, as determined by FDA, to satisfactorily complete one or more of the numbered steps, including the completion date for all numbered steps, in the work plan referenced in paragraph 6.D, FDA may order Medtronic to pay the United States Treasury as liquidated damages the sum of fifteen thousand dollars ($15,000.00) for each incomplete numbered step, per business day (e.g., if two steps are not timely complied with for two business days, then liquidated damages may be assessed up to $60,000.00), until the numbered step is fully implemented and completed to FDA's satisfaction. The amount of liquidated damages imposed under paragraphs 21 and/or 22 shall not exceed ten (10) million dollars ($10,000,000.00) in any one calendar year.

23. The remedy under paragraphs 21–22 shall be in addition to any other remedies available to the United States under this Decree or the law. Defendants understand and agree that the imposition of liquidated damages under paragraphs 21–22 does not in any way limit the ability of the United States to seek, or the power of the Court to impose, additional criminal or civil penalties or remedies based on conduct that may also be the basis for payment of liquidated damages pursuant to paragraphs 21–22.

GENERAL PROVISIONS

24. Defendants shall abide by the decisions of FDA, and FDA's decisions shall be final. All decisions conferred upon FDA in this Decree shall be vested in FDA's discretion and, if contested, shall be reviewed by this Court under the arbitrary and capricious standard set forth in 5 U.S.C. § 706(2)(A). Review by the Court of any FDA decision rendered under this Decree shall be based exclusively on the written record before FDA at the time the decision was made. No discovery shall be taken by any party.

25. Should the United States bring, and prevail in, a contempt action to enforce the terms of this Decree, Medtronic shall, in addition to other remedies, reimburse the United States for its attorneys' fees, investigational expenses, expert witness fees, travel expenses incurred by attorneys and witnesses, and administrative court costs relating to such contempt proceedings.

26. The parties may at any time petition each other in writing to modify any deadline provided herein; and if the parties mutually agree in writing to modify a deadline, such modification may be granted and may become effective without leave of the Court.

27. If, and for so long as, an individual defendant ceases to be employed by and to act on behalf of Medtronic or any of its subsidiaries, franchisees, affiliates and/or "doing business as" entities, then that individual shall not be subject to this Decree, except as to such individual's act(s) or failure(s) to act under this Decree prior to the time such individual ceased to be employed by and to act on behalf of Medtronic or any of its subsidiaries, franchisees, affiliates, and/or "doing business as" entities.

28. This Court retains jurisdiction over this action and the parties thereto for the purpose of enforcing and modifying this Decree and for the purpose of granting such additional relief as may be necessary or appropriate. SO ORDERED:

This _____ day of _____, 2015.

The undersigned hereby consent to the entry of the foregoing Decree:

_____
UNITED STATES DISTRICT JUDGE

For the Defendants:

S. OMAR ISHRAK
Individually and on behalf of
Medtronic, Inc., as its Chairman and
CEO

THOMAS M. TEFFT
Individually and on behalf of
Medtronic, Inc., as its Senior Vice
President, Medtronic
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